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BUREAU OF PLANT INDUSTRY

U.S. Department of Agriculture

WHITE PINE BLISTER RUST

News Letter, Central Division. July 9, 1917.

Believing that you who are in charge of the work of locating and eradicating the white pine blister rust, would be benefited by knowledge of what the other states are doing this season, the following news letter is being sent you. Please pass this around among your men.

R.G. Pierce.
Forest Assistant.

Michigan.

Dr. L.H. Pennington of Syracuse University is in charge of the scouting work for the Government, which is being carried on in cooperation with Professor L.R. Taft, State Inspector of Nurseries and Orchards of East Lansing, Michigan. Dr. Pennington's address is East Lansing, Mich. c/o Prof. Taft.

A press bulletin regarding the blister rust and the survey for the disease was sent out in May. A circular letter was also sent to all members of the Michigan Forestry Association and to those interested in forestry, requesting information regarding location of planted pine.

The blister rust was discovered in May 1917 for the first time, in the state at Ferrand's Nursery, at Pontiac, on white pine stock imported from France about 1910. A list of the shipments from this nursery has been secured. This showed that stock was planted locally in vicinity of Pontiac and Detroit. All of the white pine stock in the block where the rust was located will be destroyed.

The state is divided into districts for scouting, i.e., west border Lower Michigan, east border Lower Michigan, South Central, Central, north central sections of Lower Michigan, and north and south division of Upper Michigan. All known plantations, and nurseries having pine are being inspected. General scouting is carried on in all cities, in parks and cemeteries, private estates and at summer resorts.

No special appropriation was made by the state for blister rust work, though it is estimated that the state will spend about $1500.00 this calendar year on the work. The expense to the government will probably be between $6,000.00 and $8,000.00

Dr. Pennington has 7 scouts assisting him in the work.

Michigan is protected by a quarantine which prevents shipment into the state of any white pine stock.

Ohio.

The work is being carried on in cooperation with Mr. N.H. Shaw, Secretary of State Board of Agriculture of Columbus, Ohio and Prof. W.G. Stover of Ohio State University. Four scouts are engaged in the survey work, each being assigned one quarter of the State.

No special appropriation was made by the state for blister rust work. An efficient nursery inspection staff assists the federal agents in the survey.

A quarantine was put on February 21, 1917 prohibiting the importation of six of the most generally used white pines in the state. Despite this quarantine the American Forestry Co. of Framingham, Mass., has made three shipments of white pine into the state since the date of quarantine. The fate of these shipments lies with the Attorney General of Ohio. Shipments of evergreens from the moth infected region of New England are being traced for white pine. These shipments are given on the certificates of inspection from D.M. Rogers of the Bureau of Entomology, Boston, and are in the hands of each Entomologist.

The blister rust was found in Ohio in 1910, 1911, and 1916. The shipments from these three nurseries which had infected pine are being traced.

Up to the present time no rust has been found this year.

Wisconsin.

Mr. W.H. Snell is in charge of the survey work for the federal government which is cooperating with Dr. E.D. Ball the State Entomologist at Madison, Wis. Dr. L.R. Jones, of the University of Wisconsin is acting in an advisory capacity. Mr. Snell has about 20 scouts working with him.

The state made an appropriation of $7500 for each of two years, and the Government will spend at least an equal amount ($7500) during this calendar year on scouting.

Special attention is being paid to pines around Sucker Lake (Lake Waupogasset) Polk Co., where the heavy infection of pines and currants was found in 1916. Up to this time (July 1, 1917) no blister rust has been found in the state this year.

The St. Croix valley is being thoroughly scouted for the blister rust, for it is not unlikely that the disease may have escaped from the Old Baker Nursery at St. Croix, Wisconsin between 1918 and 1915.

At present all men are working out from a single camp. An auto with truck body aides in distributing the men, as well as in hauling camp supplies and in moving camp.

The nurseries in the state have been inspected for the blister rust; while shipments from May's and Strand's nurseries (Minnesota) are being traced. Where possible, these shipments have been destroyed.

It is planned to inspect the area around the Lake Waupogaset infection and the pine areas along the St. Croix River in Polk and St. Croix Counties at least twice more during 1917.

Iowa.

The work is being carried on in cooperation with, and under the supervision of Mr. R.L. Webster, State Entomologist at Ames. There are five men working under Webster on inspection work, two of whom are federal agents.

While a good survey of the nurseries and known white pine plantings was made in 1916, a much more thorough survey is being made this year of the whole state. All leads from infected Minnesota nurseries are being carefully watched and where possible the trees are being destroyed.

Illinois, Indiana, Missouri, Kentucky, and Tennessee.

The survey work in these states is being carried on by L.E. Miles and E.A. Huston, in cooperation with the several state nursery inspectors. Up to June 30, the work was confined to Illinois which state has probably the largest number of white pine plantings and nurseries handling white pines. Special attention is being given to plantings from eastern nurseries, as shown by moth inspection certificates from New England.

Nebraska, Kansas, South Dakota, and North Dakota.

In these states the survey is being carried by Mr. F.F. Weinard (whose headquarters are at Lincoln, Nebraska, care Prof. L. Bruner, State Entomologist) in cooperation with the various State Entomologists. All of the leads from nurseries which have had diseased white pine are being followed up; and steps have been taken to destroy a lot of white pine in a Kansas nursery from May's Nursery, Minn.

While the white pine has not been largely planted in this tier of states, there is a possibility of the blister rust having already been established, and of its possible spread through nursery stock to the white pine area in the northwest. The presence and extent of Ribes

along the rivers to the west and the possibility of a natural spread of the disease on Ribes across the state is being specially considered.

Minnesota.

Organization

The federal government is cooperating with the Dean of the College of Agriculture and Prof. F.L. Washburn, the State Entomologist. Mr. Harry Bartelt is in charge of the work on the St. Croix River under Dr. E.M. Breeman's direction. He has fourteen men with him on the survey and eradication of the disease. The men work out from small camps moved up and down the St. Croix Valley.

Mr. Geo. Peake is in charge of the scouting and eradication work under the direction of Prof. Washburn, and has under him seven men . Their work is in the nurseries and plantations, and small white pine plantings outside of the St. Croix District.

The state has appropriated $7500.00 and the Government will spend at least an equal amount this year in the work.

Infections

In 1916 infections were found at two nurseries, L.L. May of Lakeland, Minn., and Strand's Nursery of Taylors Falls, and at Dry Creek about 4 miles north of Taylors Falls and Pine Hollow, three miles southwest of Osceola, Wisconsin.

In 1917, infections have been found at Afton, Marine Mills, Franconia, northwest of Osceola, Wisconsin. Owatonna, St. Anthony Park, Forest Lake, Lake Vadnais in Ramsey Co. Harris and Long Branch; as well as two of last years places, Pine Hollow and Dry Creek.

Eradication

At Dry Creek all Ribes were removed last year in and surrounding the infected area. The pines were taken out in the spring of 1917 with the aid of 15 lumber jacks.

At Pine Hollow, both pine and Ribes were removed before the first of July 1917 by the scouts.

At May's and Strand's nurseries all pines and Ribes were removed in 1916 and the nurseries reimbursed by the legislature for the stock destroyed, which was not visibly diseased.

At Afton, all Ribes around the center of infection are being removed. Some of the trees from infected nurseries had been set out, and in many cases these were destroyed on suspicion even the not visibly diseased. In these cases reimbursement took the form of three to four year old white pine transplants from the State Foresters Nursery.

Office of Forest Pathology,
Bureau of Plant Industry,
U.S. Department of Agriculture.

United States Department of Agriculture,
Bureau of Plant Industry.

Forest Pathology.

Washington, D. C., August, 15, 1917

WHITE PINE BLISTER RUST NOTES

Confidential News Letter for Scouts

New England States.

The results of scouting in 1917 have shown that the blister rust is generally scattered throughout New England. In some localities Ribes inrections are few and far between but in the vicinity of pine infection centers, Ribes are heavily infected. In Maine and New Hampshire reports of 90% infection of Ribes were made for several localities as early as the latter part of June. Many new infected areas of native white pines have also been discovered and the disease has reappeared at practically all of the points where diseased pines were found in 1916. Among the important centers of native pine infection found this year are Intervale and Conway, New Hampshire; Bath, Maine; South Royalston, Vermont; Bridgewater and Topsfield, Mass.; and Pomfret, Conn. The disease has been found on large and small trees; no white pines have been found to be immune, regardless of size or age. At Stratham, N. H., more than 600 separate infections on twigs and branches were found on a tree about 3 1/2 feet in diameter, 50 or 60 feet high.

About 400 men are engaged in blister rust work in New England. The work consists mainly of eradication of Ribes. Scouting in localities where the disease was not abundant last year is also being done to a certain extent and private owners of pine timber, as far as possible, are being educated in the means necessary to make their pine timber safe, Each state has selected one or more areas of varying size from which all Ribes, (wild and cultivated) are being removed. These areas represent different environmental conditions, some having diseased pine, others none; some with an abundance of wild Ribes, others where wild Ribes are scarce, etc. All of these areas, however, have good white pine growth and by eradicating all the Ribes they can be made safe for the growing of pine.

The eradication crews are trying out different schemes in order to find the cheapest and most efficient method of work. Each eradication crew must endeavor to improve its methods of work, in every way possible. At present the general plan of work of the crews is as follows: The men are lined up 6 to 10 feet apart, and proceed back and forth over the strip of territory to be covered. The end man acts as guide and keeps the line straight. Tags, whitewash, paint, compass and breaking the

underbrush are a few of the methods which have been tried by different crews to keep a line through the woods. Thus far the compass has been found to be by far the best and cheapest method, where practical.

The tendency is for the members of the crew to work too far apart. For example, in one small swamp a crew working unsystematically reported finding about 100 wild Ribes. On going over the area in close formation the crew reported finding approximately 500 bushes additional. Most efficient results are obtained when the crew foreman acts as inspector and checks up the work of the crew all of the time. This statement carries no reflection on the efficiency of the individual members of the crew. Apparently most poor work is simply the result of an unsystematic attempt to cover the ground rapidly and thus reduce the cost per acre.

Messrs. Stoddard and Moss of Connecticut, have found by experiment that the best and easiest way to pull firmly rooted Ribes is as follows: One man pull straight upward: another man takes hold near the base of the plant and pulls at right angles to man number one. They claim this method makes the work quite easy and efficient. Try it.

In some states, County Agents have become interested in the Blister Rust and their aid has been of great value in assisting scouts in their work. They have also been of material assistance in arousing public interest. The aid of such organizations should be obtained whenever possible.

Massachusetts is taking a census of Ribes in each town. Work is also being started on a map to show the distribution of pine and Ribes in all of the Eastern States. The following classifications are being used:-

1. White pine comprising half of stand or more.
2. Scattered white pine of commercial value.
3. White pine present but of negligible value.
4. Commercial currant growing areas.
5. Wild Ribes numerous.
6. Wild Ribes few.
7. Areas where skunk currants are found.

Scouts and others are urged to collect as much of this data as possible and record it on topographic sheets or other maps of the area in which they are working, for assistance in making this map.

New York State

In cooperation with Ontario all Ribes on strips one and one-half miles wide along each side of the Niagara river have been eradicated to prevent the spread of the Rust into

New York State from Ontario. West of Connecticut and Massachusetts another strip about two miles wide was eradicated in 1916 to prevent the spread from the above mentioned states. This strip was gone over again this year to remove any remaining Ribes. Early in August several new Ribes infections were reported north and south of the terminating points of this line, but no infections have yet been found directly west of the line.

A general infection of considerable extent was discovered last year in the northeastern section of New York. Results of recent scouting outside of this area have shown that the disease is distributed from Lake Champlain well into the eastern portion of the Adirondack region. The line of western extension of the disease, as located by scouting to date, runs through Constable, North Bangor, Malone, Bloomingdale, and Saranac Lake, Franklin County; and Lake Pleasant, Hamilton County. Infected Ribes have also been found at Chestertown, Weavertown and Warrensburg, Warren County; in the best white pine section of the state.

A previously unreported plantation of imported pine, (from the Heins nursery, Germany) may explain the wide distribution of the disease in northern New York. This planting was made in 1903 or 1904 at Hurricane, Essex County, N. Y., not far from the locality where numerous diseased native pines were found last year and this year. This area of scattered native pine infection covers a number of square miles between Lewis and Cross, Essex county, and has been selected to demonstrate the practicability of controlling the disease. Eradication crews have removed cultivated Ribes and are now pulling up the great grandfathers of all wild gooseberry bushes. About fifty men are engaged in blister rust work in New York state.

Scouting is in progress in other parts of the state and a few isolated infections of Ribes and planted pines have been found. Ribes are eradicated in and around diseased plantations for a distance of approximately one-half mile. Near Geneva, N. Y., diseased pines were found in a plantation made in 1905 from stock purchased from a large nursery in Illinois. Ribes were eradicated around this plantation last summer and very early this spring the plantation was scouted with extreme care and all diseased or suspicious trees were removed. The results have been very gratifying as frequent inspections have been made and no Ribes outside of the control area so far have been found to be infected.

Pennsylvania

Diseased pines have been found in four places but in each instance they were removed before the fungus had fruited. No diseased Ribes have been reported to date.

New Jersey.

Scouting is in progress but only one infection has been found. This was in a private nursery where the disease appeared last year. Hitherto New Jersey has been considered as being practically free from wild Ribes but recently they have been found rather abundantly in the northwestern part of the state.

Ohio.

Two specimens of diseased pine have been reported from a nursery located at Cuyahoga Falls.

Southern States.

Scouting in Maryland, Virginia, West Virginia, North Carolina, South Carolina and Georgia has thus far revealed no Blister Rust. Planted pines in these states are not abundant but scouting has revealed a larger number of plantings and a greater abundance of wild Ribes than was previously suspected.

Michigan.

The Blister Rust has been found on imported pine in a nursery at Pontiac. These trees came from France in 1910 and all shipments from this nursery are being traced. A force of eight men are engaged in general scouting under the direction of Dr. Pennington of Syracuse University.

Wisconsin.

A few Ribes infections found close together near St. Croix have been reported, but the source of this infection has not yet been discovered on pine. A force of 24 men are scouting the State.

Minnesota.

More than a dozen infections have been found in the St. Croix valley scattered over a territory approximately 60 miles long and 10 miles wide. Several native pine trees and many Ribes were found diseased. Infections appear to be spotted over the valley and an attempt is being made to eradicate the disease on both pine and Ribes. Pine stock shipped from nurseries has been traced and several of these shipments were found to be diseased. Twenty-six men are engaged in scouting and eradication.

South Dakota.

One tree on an estate located at Estelline has been found diseased with Blister Rust. The tree came from an infected Minnesota nursery in 1911 and illustrates the danger of spreading the disease through shipments of nursery stock.

Middle Western States.

Blister rust scouting is now carried on in Iowa, Illinois, Indiana, Missouri, Kentucky, Tennessee, Nebraska, Kansas and North Dakota, in cooperation with the various state authorities. Thus far this year no disease has been discovered in any of these states although numerous plantings of pine have been found and examined.

Western States.

Survey work in the Rocky Mountain and Pacific Coast States having native five-leaved pines has thus far revealed no evidence of the presence of the white pine blister rust. The rumor that the blister rust was found in the state of Washington is apparently unfounded.

A fungus having somewhat similar appearance to the white pine blister rust was found in Kansas in 1892 and in Colorado in 1897 and later. Inoculations by members of this office have practically proved that the rust on Ribes in Colorado is not the white pine blister rust.

Appropriations.

Specific appropriations for the control of the white pine blister rust have been made as follows:

Massachusetts	$50,000	1 year
New Hampshire	28,000	2 years
Vermont	20,000	2 years
Maine	10,000	2 years
Connecticut	20,000	2 years
Rhode Island	2,500	1 year
New York	25,000	1 year
Pennsylvania	10,000	1 year
Wisconsin	15,000	2 years
Minnesota	15,000	2 years

The Federal Government appropriated $300,000 for the Fiscal years 1917 and '18, $150,000 of which is being expended on a dollar for dollar basis, in the various states which have made appropriations for this work.

Cost and Efficiency of Eradication.

The present outlook for controlling the disease seems to center entirely on whether or not wild Ribes can be completely and economically removed and whether owners of cultivated Ribes prefer to lose their bushes rather than the pine. Professor E. G. Cheyney, Dean of the Minnesota Forest School, is engaged in a study of the eradication problem from every angle. He has suggested that in each demonstration control area data be secured this year for providing accurate information in the future on the effectiveness of control and the rate of progress of the disease outside of control areas. A rough topographic

map will be made showing the distribution of pine by age classes, also showing type of area for Ribes growth, such as swamp, open meadow, brush land, pine woods, hardwood forests, etc. In the control area the record of Ribes plants by species and amount of infection will be made, for each type, on permanent sample plots 50 feet square. Outside of the area several lines radiating from the control area will be run for some distance to provide check plots for determining the rate of advance of the rust.

Educational.

The Government has drawn up a contract for printing 100,000 posters depicting in color the life history and effects of the blister rust on pine and Ribes. They will be distributed among the white pine states having no appropriation for blister rust work and posted in conspicuous places as soon as they come from the printer. Most of the states having appropriations expect to order a supply of these posters with some changes in the printed matter.

New York State has prepared a large post card, on one side of which a specimen of the rust fruiting on native pine is shown in colors. On the other side is a brief description of the disease. They are preparing another card of a similar nature on which will be reproduced, in colors, leaves of the red and flowering currant showing the rust on the under side. The color work on these cards is exceptionally good and it is a highly effective method of disseminating knowledge concerning the blister rust.

Scientific Data.

Messrs. Posey and Gravatt discovered the following important points in their investigations at Kittery Point, Me. this spring. (a) The rust was found to be fruiting on the exposed roots of pine trees 10 to 15 years old. (b) Young gypsy moth caterpillars carry large numbers of aeciospores on their bodies. These caterpillars also feed on the spores within the fruiting pustules and on the tender tissues underneath. The Bureau of Entomology has found that young gypsy moth caterpillars are carried up to 20 miles or more by the wind. This,is, therefore, to some extent a possible means of disseminating the disease, and other insects may play a similar role in the spread of the blister rust. (c) Spores may remain dormant two months (some longer) and still germinate. (d) The germinating power of spores was mostly but not entirely destroyed by being eaten and passed through the intestines of caterpillars. (e) Diseased branches cut from trees in the fall have been found to fruit the following spring if left on the ground in moist places. Where diseased branches of trees are cut they should be gathered up and burned. (f) A young gooseberry stem was inoculated with aeciospores and the uredo stage produced. A number of natural stem infections have also resulted in the formation of the uredo stage.

The question of over-wintering of blister rust on Ribes is still undetermined, but the above and other recent evidence points strongly in that direction. Dr. Spaulding would appreciate it if a rather careful search is made for green stem infections when examining diseased currant or gooseberry bushes. If a stem infection is found dig up the entire plant, wrap damp, dead leaves, moss or paper around the roots, box, and send by express to Dr. Perley Spaulding at Washington, so that the plant will arrive in a vigorous condition. Label specimen with your name, place where collected and date.

Forty-five species of Ribes including many from the white pine region of the northwest and seventy-five varieties of black and red currants have been tested to determine their susceptibility to blister rust and not one has been found to be entirely immune.

The blister rust has been found on or produced by inoculation upon the following species of five-leaved pines.

P. strobus - Eastern white pine
P. monticola - Western white pine
P. lambertiana - Western sugar pine
P. flexilis - limber pine
P. cembra - Stone pine (foreign).
P. excelsa - Himalayan white pine (foreign).
P. parviflora - Japanese white pine (foreign)

In many cases blister rust cankers are so much overgrown by lichens or covered with dirt that the yellowish discolored bark does not appear different in color from the rest of the bark. If the suspicious area is scrubbed with a wet rag the yellowish zone can be seen. Aside from the actual presence of aecia, the discolored bark is by far the most valuable guide in the field where cankers caused by other fungi are present.

Spraying.

No spray has been found which can be used effectively against the blister rust either on pines or Ribes. Spraying is not recommended, because the disease spreads very rapidly on currants and to considerable distances. A number of tests have been made by men who realize the necessity for careful work and who presumably did the most thorough work possible under the circumstances. In Europe, Ewert attempted to spray black currant bushes thoroughly enough to keep the disease off of them. He concluded that it was impossible to do it. A similar attempt was made by McCubbin in Ontario two years ago. He sprayed every two weeks and also concluded that it was an impossibility to keep the disease entirely off the sprayed bushes. Other attempts have been made in different localities with the same results. Unless absolute freedom can be secured from this disease, spraying is inefficient, since a single rust pustule is sufficient to start the disease upon neighbor-

ing currants. The disease is known to jump from currant to currant at least one-half mile and under favorable conditions it jumps several miles. For illustration, Posey reports: "I have definite knowledge of distant dissemination of the white pine blister rust, August 4, 1917. Sporulating uredinia were collected on wild gooseberry on Duck Island, Isle of Shoals, Maine. There are no pines growing on this island and the island is located seven miles distant from any pines. The island is small, no one lives on it, and from the general appearance, I judge that it is seldom visited. At any rate, it has not been visited previously by blister rust hunters to my knowledge." For these reasons the removal and burning of bushes at once is the only safe procedure to follow.

The question of securing a resistant variety of currant or gooseberry is still in need of further investigation. It is desired that scouts send in to Dr. Perley Spaulding at Washington, cuttings of currants and gooseberries which show marked resistance to the disease. Only cuttings of apparently resistant uninfected Ribes which are under very severe test conditions, that is, with heavily infected Ribes within a few feet need be sent in. Wrap specimens in damp, (not wet) moss or dead leaves and label with your own name, place where collected and date. State briefly why the specimen is thought to be resistant.

Use of Chemicals in Eradication.

Experiments are being carried on to obtain if possible some cheap chemical which will kill wild Ribes bushes. Over 500 experiments are in progress using different chemicals and methods. Various derivatives of arsenic, sulphur and ammonia are being used as a spray to kill the foliage. Fuel oil is also being tried. Plots were sprayed with fuel oil and two days later burned over without good results. The soil about Ribes plants in one series of experimental plots is being treated with dry chemicals such as salt, calcium chloride and sodium carbonate. Sodium arsenite, sodium cyanide and fuel oil are injected into the soil near the roots of bushes in liquid form. Some of the gaseous chemicals employed are sodium sulphid, sodium bisulphid, chloride of lime, calcium carbide, carbon bisulphid, formalin, chlorine water, hydrogen sulphide water, turpentine, nitro-benzine derivatives, crude carbolic acid, etc. These substances are placed in the soil around the roots of wild Ribes bushes in various quantities. Thus far the use of chemicals as outlined above has met with very little success. In addition, mechanical methods of removal are being tested to determine comparative costs and efficiency in preventing sprouting from the roots.

Draft.

Where men are otherwise liable to the draft, no exemptions, either permanent or temporary have been granted to Government blister rust workers. However, it is possible that temporary

delay in reporting for duty until after the close of the present season's work may be secured for men whose services are highly necessary for the conduct of the work. No request for delay in draft can be made until the men are notified to report for duty at the Army camps. It is announced that 30 per cent of the quota of each district will be called on Sept. 5, the next 30 per cent Sept. 15, and another 30 per cent on Sept. 30. The remaining 10 per cent will be mobilized as soon after that date as possible.

Blister Rust Conference.

A conference of State and Government men actively engaged in cooperative blister rust work in the New England States was held at Amherst, Mass., July 17 and 18. The following is a summary of the conclusions reached and applies especially to the New England area:

1. The essential thing in controlling the blister rust is to get out all Ribes. The most effective time for doing this is in the early spring, and this part of the season should be used for rescouting control areas.

2. It is not feasible to spend time and money in scouting and eradicating diseased pine in New England, except where there may be outbreaks of the disease in new territory.

3. The establishment of control areas, in which all Ribes, both wild and cultivated, shall be eradicated as far as possible, is regarded as the most practicable means of limiting the ravages of white pine blister rust; and owners of pine woods are urged to co-operate with state authorities to control the disease in their several localities.

4. In the expenditure of funds appropriated for blister rust work, the conference approved; 1. The method of direct state experimental areas to determine the cost of control by means of the eradication of wild and domestic Ribes under various conditions; and 2. Such co-operation with private owners as will give expert direction or supervision to their work.

5. Localities established as control areas should be scouted at least four successive years for Ribes.

6. Men inspecting should be required to carry whisk brooms and to brush their entire clothing with these after dipping them into disinfectant when circumstances require, also thoroughly to wash their hands and arms.

Discussion at the Conference made it clear that in the generally infected New England territory, inspectors should not be required to wear a special uniform which has to be sterilized frequently. One objection to this is that such a suit would have to be sterilized many times each day, possibly 30 or 40 times,

causing inconvenience and great delay. An even more important consideration, however, is the danger of poisoning, or at least of severe skin irritation, by the strong antiseptics used, and this risk does not appear to be warranted by the conditions in New England. Also, it has been found that the antiseptic which is most highly recommended, corrosive sublimate solution, will not penetrate into the interior of spore masses because of the film of air surrounding them. Strong ammonia water not only penetrates spore masses readily byt is an effective agent in devitalizing the spores. Inspectors are most likely to carry the spores on their hands and arms. By keeping their shirt sleeves rolled back when examining Ribes, it is a simple and harmless operation to first wet the hands and arms with pure water and then rub them well with about a teaspoonful of strong ammonia water and immediately wash this off in clear water after making the inspection. Also, since such spores as reach the clothing must adhere rather loosely in order to be in danger of carrying the disease to uninfected plants, it is believed that the chances of spreading the disease on the clothing will be very small if after each inspection of infected plants the clothing is brushed with a whisk broom moistened with strong ammonia water.

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BUREAU OF PLANT INDUSTRY

U.S. Department of Agriculture

CONTROL OF WHITE PINE BLISTER RUST

Confidential News Bulletin

for

Blister Rust Employes

Not for Publication

Sept 17, 1918

The Boston Traveler says in an editorial, "To criticise is easy; to create is a job for a real man. It is the creator, the constructor, the builder, the harmonizer who goes to the top and stays there." We are developing a new line of work and must develop methods that will bring results. If we fail to develop practical methods it will mean that millions of dollars worth of white pine will be sacrificed because of our failure. In the East our present job is to destroy wild Ribes on the areas in which we are doing work, as completely as is humanely possible, at the lowest possible cost. It is also part of our task to interest pine owners in the work and secure their cooperation in protecting the pine at least to the extent of removing their cultivated currants and gooseberries. Any currants and gooseberries at a distance from white pine are a source of danger. It seems certain, however, that the nearer they are to the diseased trees, the more heavily the bushes are infected with blister rust, and the more exposed they are to the wind, the greater the danger to the pines. This view should not be taken to mean that it is not desirable to remove all Ribes in the areas worked by the crews. The only standard for Ribes eradication is complete removal of the bushes from every area worked over by the crew. The men who make good in blister rust eradication will be those who show results in thoroughness of Ribes eradication, in acreage covered and in reduction of cost per crew. To secure these results, interest, initiative, common sense and cooperation are needed in every man on our work. This is work worth doing and worth doing well and while less exciting than being in the trenches it is essential because it has a direct bearing on the future welfare of our country.

EASTERN DIVISION

New England States:

Owing to the lateness of the season this will be the only news letter which can be sent out to scouts this year. Another season we may be able to arrange for a monthly letter by having the cooperators and field men send in news items regularly.

On April 15th Mr. Marble found an open aecial blister at Pembroke, Massachusetts. On April 26, Mr. Root reported that numerous pustules had broken in the vicinity of Pembroke Inn. Dr. York found fruiting pine at Swansea, Mass., on April 5, and Mr. Stoddard got fruiting pine at Litchfield, Conn., the first or early part of the second week in April. At Brunswick, Maine, open blisters were discovered on May 2nd by Mr. Frost.

About 150 men have been employed on the work in these states. Limited scouting uncovered new centers of infection between Bath and Brunswick, Maine; at Keene, New Hampshire; and Pembroke, Massachusetts. At the latter place, within a radius of 500 feet of the diseased Ribes there were 1360 pine trees of which 43 out of each thousand were infected. In a zone of 500 feet outside the central circle there were 7840 white pines, of which 33 out of each thousand were attacked by the rust. In a 500 foot zone just beyond the second circle there were 14,710 pines, and only 4 out of each thousand were infected, or less than 1/10 as many as at the center of the area. This would indicate that heavy pine infection takes place only in comparatively close proximity to diseased Ribes; also, that pines can be fairly well protected by eradicating all Ribes in their vicinity and for a distance of 1/3 of a mile around them. (See article by S. B. Detwiler in American Forestry for August for fuller description of Pembroke infection).

What is the object of establishing experimental control areas in generally infected regions where complete eradication of the disease is impossible? It is to demonstrate the practicability of Ribes eradication as a preventive and control measure; to serve as trial areas for developing effective eradication methods which will successfully solve the problem of control in those regions; to obtain data on costs; to serve as experimental areas for future study and at the same time to obtain permanent protective results, as all the areas are covered by a good growth of white pine.

Last year the percentage of eradication varied from as low as 60 to as high as 95 while the lowest cost per acre was 11 cents. Which crew will hold this season's record on cost of Ribes eradication? In May in the town of Newfields, New Hampshire, Jack Corliss' crew pulled an average of eight wild Ribes per acre, on 1167 acres, at an average cost of twelve cents per acre. Time, .49 man hours per acre, or 3.92 acres per man per day. The "going" was not easy as the swamps were full of water, yet in the most difficult section checks showed 85 per cent complete eradication of the bushes. At the end of the season it will be hard to beat Jack's record for both cost and efficiency. As more efficient eradication methods are developed and the work becomes more uniform and systematized, the cost per acre will undoubtedly be greatly reduced. Daily checks greatly increases the efficiency of eradication and furnishes data on the effectiveness of the work.

Maine has two crews at work. One is completing re-eradication of the Kittery Point control area, under W. O. Frost. The other is re-eradicating the control area at Alfred. Work on a new control area between Bath and Brunswick is being started. Last spring in this area Frost discovered a well advanced pine infection area connecting with the area of infected pines found in 1916 by Posey and Briscoe, making the infection area about four square miles in extent. In Maine the rust is not so general on Ribes as last season and the radius of pine infection has not been extended much

beyond that previously known. Neither has currant infection been so heavy as last year. Several small Ribes plants and sprouts from broken off roots have been found on areas worked last year. Mr. Frost, of Maine, states that on some ground, re-eradicated this year, they pulled 177 Ribes, 90 per cent of which were sprouts from broken roots. He aptly adds that "while using the 'Battle Axe' may take more time, it does the job and eliminates danger of sprouting from broken roots."

In most States blister rust exhibits will be displayed at the State and County fairs as part of an education campaign. Questions will be answered and bulletins on the disease distributed. At Intervale, New Hampshire, Messrs. Moir, York and Corliss held a blister rust meeting recently. About seventy-five people were present and much interest was shown. An excellent window display of blister rust specimens was made in a store window at Bartlett, New Hampshire, and proved to be a most valuable means of arousing public interest

In the town of Swanzey, New Hampshire, a number of school children were persuaded to go over the area worked by the crews and find wild Ribes left by the men. No bushes were found. They were then taken to an unworked area and succeeded in gathering many bushes which they took home. This had a very favorable effect on the people, who did not object in the least to the removal of their cultivated currant bushes. This instance is cited to show the interest and cooperation of the townspeople and methods which can be employed to arouse their enthusiasm.

About $7,000.00 was appropriated by forty towns in New Hampshire for Ribes eradication work in cooperation with State and Federal Governments. At the present time the work in twenty-one of these towns has been completed. The work is educational in scope and the area selected is designed to show the kind of work necessary to control the disease. Every effort is made to assist individual owners in private eradication by inviting them to observe the field methods practiced by crews at work in their towns and by loaning competent employes to aid them in starting their operations along effective lines. It is expected that the work thus started will be continued locally until all Ribes (wild and cultivated) have been eradicated within a distance of 1/3 of a mile of pine growth.

To remedy incompleteness and lack of uniformity in field records some forms were devised for use in the field. They will also help to put the organization and its work on a uniform, systematic basis; provide essential data necessary for future use and allow the application of business methods. After a fair trial the forms will be revised to eliminate defects and add improvements.

In Vermont the control areas at North Thetford and Sharon have been covered again this year for Ribes and the work closed for the season. It is planned to scout the pine regions this fall and make a map showing the location of pine areas in the state. In Rhode Island such a map has been completed and it was found that the State contained much more pine than formerly supposed. Its estimated value is $1,300,000.

Massachusetts has seven crews working on two control areas, with Petersham and Hanover as centers for work. No work is being done on inspection of cultivated Ribes except in the towns where wild Ribes are being removed. In the Hanover area a plan is being tried whereby a man maps and scouts in advance of the crew for the location of Ribes. This man covers the tract in two directions in strips about five hundred feet apart. Where the Ribes are numerous, the ground is gone over by the crew at least twice, the strips being run in different directions each time over the area. Where Ribes are absent or very few several methods are being tried to insure complete eradication of the Ribes at less cost than by the regular method of work.

In the two areas that are being worked in Massachusetts several new pine infections have been found on scattered trees but no new infection covering a large amount of territory. Infection has appeared on wild gooseberry in both areas much more frequently than on wild currants. The type of labor used in Massachusetts has been for the most part, young college men below the draft age. They have proved very good help, being quick to find the bushes, and in most cases keeping up their interest throughout the season.

At Barre, Massachusetts, research is being conducted to determine the possibilities for eradicating Ribes by means of chemicals as well as to determine the percentage of germination from Ribes seed and the percentage of sprouting from the roots broken off under the ground. Two chemical solutions have proved especially effective in killing Ribes and it is hoped that further experiments will show spraying to be a practical method of destroying mats of skunk currants and wild gooseberries in stone walls. It is expected that information along these lines will be of great practical value in developing more efficient control methods.

In some parts of the country Ribes are not generally distributed. For instance, one crew covered twelve hundred acres in Dublin, New Hampshire. They found no wild Ribes. At North Conway, New Hampshire, few wild Ribes were found on large areas except for a few patches of Skunk Currants. At Hanover, Massachusetts, there are scattered areas, sometime one hundred acres or more in extent, where no wild Ribes are found. In Rhode Island, no wild Ribes have been found on land where scrub oak forms a dense cover. On the other hand, on a quarter acre plot near Paradox Lake, New York, forty two wild gooseberry bushes, two to five feet high, were counted, and at Lake George, New York, three hundred to four hundred currant and gooseberry bushes per acre was the rule, sixty bushes per acre being the least number found.

New York State.

Infected Ribes have been found at Rochester, New York. As a result of scouting now in progress, it is expected that spot infections in western New York will be found. At Geneva where eradication of diseased pine and Ribes was carried on around infected pine plantations, the disease has not reappeared on Ribes but young infections were found on pine. This season several incipient pine infections have been found in the Adirondack region and large areas of pine infection were discovered near Wilmington and at Lake George.

In eastern New York blister rust conditions duplicate those existing in New England. Infection is general, control areas have been established and about 100 men are engaged in eradicating Ribes. A recent check of eradication at Chestertown showed that the men were finding and removing as high as 99 per cent of the Ribes.

A meeting of the Lake George Association, which was held on August 14, at the Association's club house, was attended by a number of owners of white pine growing on the lake shore. The Association had previously subscribed about $800.00 for blister rust control and at this meeting took steps to secure larger contributions for this purpose. The wealthy owners in this section are thoroughly interested and are doing their best to prevent the further spread of this disease. Professor G. H. Collingwood has been promoting local cooperative control at Lake George and has had supervision of Ribes eradication on about 1000 acres of valuable estates. The Association plans to raise $10,000 for the continuation of cooperative work, of which about $4,000 is already subscribed.

The Schroon Lake Association has subscribed $500 and eradication is under way at one point on the lake shore. It is expected that additional funds will be secured in the near future.

A small crew of women is at work pulling gooseberry bushes growing around a white pine plantation at Goldsmith, New York. The foreman in charge states that only women will consent to work at the wages offered.

Three types of gooseberry diggers have been developed in New York this year and all are proving useful because they make it possible to remove the crown and large roots of the bushes, thus preventing sprouting. The largest is a two-tined hook designed for use in the section of New York where "regular gooseberry bushes" are produced. The tool is strong enough to stand the pull of three or four men, and is considered by all who have used it a great time and money saver.

A young man working in a crew at Warrensburg, New York found two wild gooseberry bushes twelve feet up in a maple tree. This is not uncommon as the same phenomena has been observed at Ipswich, Mass., and at Norfolk, Conn. At Ipswich the Ribes bushes were growing in a willow tree.

Pennsylvania:

This season three or four diseased trees were found near Reading and one 12 year old tree near Chestnut Hill. Infection has been found in previous years at both these spots. They are under careful observation and the prospects are favorable for the complete eradication of the disease. A tour of inspection of Ribes in all northern counties bordering on New York State is under way. To date no infection on Ribes has been found.

New Jersey:

In the vicinity of Little Silver, slightly diseased black currants have been found at three places and eradicated. No diseased pine have been found to date, but they are being thoroughly examined to find the source of the Ribes infections. The blister rust has been found in this neighborhood in previous years but evidently was not entirely eradicated.

Southern States:

Intensive inspection of pine plantings and general scouting of native pine and Ribes in Maryland, Virginia and West Virginia during the past and present seasons has revealed no blister rust. A limited amount of inspection is under way in Delaware and North Carolina, mainly on pine plantations of suspicious origin.

CENTRAL DIVISION

A blister rust school campaign has been launched in the public schools of Minnesota, Michigan and Wisconsin, for the purpose of educating the children to a knowledge of the disease and obtaining their aid in scouting for the rust by having them examine and report on Ribes in the vicinity of their homes. This method of scouting and education has been tried with success in Canada.

Wisconsin:

Instead of Minnesota being the heavily infected state this year, it seems as though Wisconsin would take the honors. In the latter state the rust has been found in seven counties: Pierce, Polk, Burnett, Barron, Washburn and Rusk in the west and Shawano in the east. Heavy pine infection was found near Lewis where diseased pine and all Ribes on about forty acres were eradicated. Approximately 15,000 Ribes bushes were removed on about sixty acres located five miles east of Grantsburg. Ribes infection was traced through the woods for over a mile in Barron County, about fifteen miles east of Cumberland. At Weyerhaeuser infection was found on a few Ribes bushes; in Pierce County infection was found on Ribes; in Washburn County infection was found on two bushes near Shell Lake; in Shawano County, near Keshena, in the Indian reservation, a heavy infection was found on Ribes scattered over approximately 100 acres; in Polk County a few bushes in the Interstate Park at St. Croix Falls were diseased and the same condition existed at two places near Amery.

Numerous supposed infections were found on Ribes in Wisconsin, which Dr. Hedgcock identified as Coleosporium ribicola. It is characterized by reddish yellow uredinae irregular in size, later associated with waxy red-orange telial sori which never develop horns. The men know this Coleosporium now but it misled them all at first, especially in the earliest stages.

Another rust has been found on Ribes in Minnesota which at first was mistaken for Cronartium ribicola. On Ribes it is known as Ceoma confluens and has white colored aecial cups. Its uredinial and telial stages occur on Salix (willow) and on that host it is known in Europe as Melampsora ribesii-viminalis, not having been found in America.

Minnesota:

In Minnesota, six infections of blister rust are known, four of them, namely: Rush Lake, Goose Lake (five miles south of Rush Lake), Cross Lake (near Pine city) and Afton were known last year, while two new infections were found on leads from infected nurseries. These are located at Chisago City (on pine originally from Strand's Nursery, reshipped by Carlson's Nursery)

and at Rochester. At the latter place two trees were found in the pycnial stage in a lot of 500 planted in 1912 from May's Nursery. 450 of these pines have been destroyed and the others will receive like treatment soon.

At Cross Lake the infection was confined to a three acre lot of second growth pine and aspen. From this spot 19 diseased pine and 528 gooseberry bushes were removed. The infection had not spread to adjacent territory as far as could be discovered.

At Goose Lake the few bushes found infected were eradicated. At Afton infected pine and Ribes have been removed, while at Rush Lake all known infected pines and all Ribes except in the swamps have been removed. Rescouting of all 1916 and 1917 infection centers is at present under way.

In Michigan, two pine infections have been found at Birmingham, one in a nursery and the other in a small shipment of pine sent out from this nursery three years ago. The diseased trees, together with all others, belonging to the same lots, have been destroyed. No diseased Ribes have been found in the State.

No infection has been found in the other states composing the central district. Approximately eighty men have been employed on the work in this region. One violation of the Federal quarantine was discovered in Nebraska and others were turned up in New Mexico.

About fifty men have enlisted or been drafted into the military service. Many of the men are now resigning to return to college and school.

WESTERN DIVISION

Scouting has been under way for two seasons in the Pacific Coast and Rocky Mountain states without finding any trace of the blister rust. The object of the work is to discover whether the disease has obtained a foothold locally through the introduction of pines and Ribes from Europe or infected American districts. The problem, therefore, is to secure all possible data on foreign and domestic importations; to locate the introduced plants and to inspect those whose origin indicates their liability of infection. In the Pacific Coast district, comprising the states of Washington, Oregon, California, Nevada and Utah, about 47,005 shipments have been traced. These contained approximately 8805, five-leaved pines and 2,012,690 Ribes plants. 13,965 pines were inspected of which about 6,250 are reinspections. Of the Ribes 453,270 plants have been inspected. A total of 1500 individual localities have been visited and the total number of record cards is 65,000. These figures will give some idea of the amount of blister rust work being done on the Pacific Coast.

In the territory comprising the states of Montana, Idaho, Wyoming, the Black Hills region of South Dakota, and two counties in the state of Washington, a total of 1,436 pine and Ribes inspections have been made without finding any blister rust.

Inspections were also made in Colorado, Arizona and New Mexico with negative results. At present all evidence indicates that the Western Division is free from this disease and by rigidly maintaining existing Federal and State quarantines, it is hoped that this region will be kept immune.

CONFIDENTIAL NEWS LETTER

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BUREAU OF PLANT INDUSTRY

U.S. Department of Agriculture

June 16-1919

NEWS FOR BLISTER RUST WORKERS

(Confidential Letter - Not for Publication).

EASTERN STATES

Maine:

Ribes eradication is in progress on the Brunswick control area, and a white pine-Ribes survey of York County has been started. Two crews are at work in Maine, under the direction of Professor Briscoe. An intensive study of the Kittery Point pine infection center was completed during the winter by Messrs. Posey, Marble, Frost, Richards and Clark. This infection is one of the oldest found in the United States, probably dating back to the summer of 1897, when black currants imported from England were planted in the area. Trees of all sizes are affected. The trunk of one tree 15 inches in diameter, 45 feet tall, was girdled 15 feet below the top, and broken off at that point. On an adjacent tree of about the same size, the fungus has half girdled the stem at a point 20 feet above ground, where the trunk is 23 inches in circumference. The disease is present at some point on every main branch on both trees.

The area was surveyed into one-quarter acre plots, the trees charted, and the percentage of the diseased trees determined for each plot. This work is intended to help solve the problem of how far Ribes must be separated from pines to permit commercial pine growing. Infection extends north, west and south of the site of the planted currant bushes. The area is egg shaped, with the longest radius extending south west of the point where the currant bushes grew. East of where these bushes stood the percentage of infected pines is less than 10% and the disease is scattering. The zone in which 75% to 100% of the pines are infected covers about 2 acres, lying within a radius of 200 feet of the currants. The outer boundary of the zone of 50%-75% infection lies within an average radius of 400 feet of the currants, while the 25%-50% infection boundary extends out 700 feet from the center. The outer limit of infection appears to be between 800 and

1000 feet west of the bushes which spread the disease.

New Hampshire:

Forty-eight New Hampshire towns have appropriated over $8,000 for cooperative blister rust control work. Seven eradication crews are working in the southern part of the State. The work is supervised by Messrs. Corliss and Hale. Mr. Warwick is in charge of educational work in towns ahead of the crews. In this area two men are locating Ribes by preliminary scouting with excellent results. For example, Mr. Hodgkins, while doing preliminary scouting at Hampton, recently covered nine hundred acres at a cost of 4¢ per acre. This area was later checked by other men but they failed to find any bushes that had been missed by Mr. Hodgkins. Uredo spores were found at Temple, N. H., on black currants, May 26.

Massachusetts:

Two crews are at work at Marshfield, Massachusetts, under the direction of Mr. Perry. Professor Fisher, of Harvard Forestry School, has provided $500 for cooperative control work in the Harvard Forest at Petersham. Mr. Perry has secured the cooperation of two private owners who wish to protect their pine by eradicating the currants and gooseberries. A federal field office is located at 30 Holyoke House, Harvard Square, Cambridge, for the purpose of compiling field records and is also headquarters for Mr. Gibson, the field disbursing agent.

Vermont:

Vermont has one crew working at Sharon under the direction of Mr. Bailey, eradicating Ribes around the State pine plantation and this work will also be carried out on several other State plantings. The preliminary scouting method of locating Ribes is being tried out. An experimental area will be started at Rye-gate June 3, under the immediate supervision of Mr. Marble. Various methods of

scouting and crew formations will be tried out on this area with a view to securing accurate field data on the cost of the different methods and to demonstrate to local pine owners the desirability of eradicating currant and gooseberry bushes in order to protect their pines.

Rhode Island:

Two crews are at work. One is enlarging the demonstration control area at Summit and the other is working on a control area at Chepachet. At the latter place the crew recently pulled over 6,000 Ribes on approximately 10 acres of land.

Connecticut:

One crew is at work in the vicinity of Norfolk in the northwestern corner of the state where there is valuable native white pine. The control work done in this section during the past three years is apparently highly successful in checking the spread of the rust from this center.

New York:

New York has four crews at work on the west side of Lake George, under the supervision of Mr. Woodward. Mr. Woodward has recently found many new pine infections at various points along the shore of Lake George. One crew is at work at Schroon Lake and the cooperative work which has been carried on with the Lake George and Schroon Lake Association is being extended this season. Mr. Browning has three crews at work on the Adirondack demonstration control area which is composed entirely of forest. At Keeseville, Lewis, Warm Pond, Wilmington and other points in Essex County, the work is under the supervision of Mr. Elwell. At present Mr. Elwell has two crews at work and the private owners in the vicinity of Lewis are strongly in favor of local cooperative control work. The enthusiasm of small land owners in Essex County for cooperative control work, is very encouraging and a number have signified their intention of eradicating

currants and gooseberries from their own land on a cooperative basis whereby they agree to thoroughly clean up a portion of their property and the State and Federal crews the remainder.

The New York Conservation Commission has recently started making a motion picture of the Blister Rust. This office, also, has completed the "shooting" of a motion picture film covering the blister rust work and the white pine industry, which will be finished early this summer.

Other States:

In Pennsylvania, New Jersey, Virginia, West Virginia and Maryland, scouting is in progress, but no infection has been found this season.

CENTRAL STATES

Michigan:

Blister rust inspection work started April 20, in Oakland County. Mr. Johnson located a diseased pine tree May 12th on an estate between Pontiac and Birmingham, with the unbroken blisters just pushing through the bark. The diseased stock came from a nursery in the State where the disease was found last year. Additional men will start work in Michigan June 15, under the direction of Professor Young.

Wisconsin:

In Barron County about one-half million feet of white pine timber has been cut on the Rice Lake infection area and adjoining areas. The brush and tops were burned and all small pine trees were cut whether visibly infected or not. Mr. Nirman has been supervising this work, using local labor. The first aecial blisters were found breaking through the bark April 22 and open blisters April 29. The large pine trees on the Grantsburg and Lewis infection areas were removed during the winter. The small pines were removed early this spring by Mr. Senn,

with help of local labor. Professor Stevens is again in charge of field inspection work for this season.

Scouting on the Menominee Indian Reservation by Messrs. Pickler and Dorr has been in progress near Keshena where the disease appeared on Ribes last year, and in vicinity of planted pines, about 12 miles north of Keshena. The Keshena area has been intensively inspected for infected pine with negative results although the rust was found there on wild Ribes last autumn. The planting area contains about 15,000 white pines which were purchased in 1913 from an Eastern nursery. This nursery is known to have sent out diseased trees to other points and the infection found at Keshena may have come from infected trees in the planted area. The 15,000 pines are but a part of the original number planted, the rest having been destroyed by fire in 1917. As yet no diseased trees have been found, but many of the plantings remain to be inspected.

Minnesota:

On May 15, twelve men were engaged in inspection and eradication work and at present about thirty men are on the job. Two new pine infections have been located in Isanti County, one in Stanchfield and the other in Maple Ridge township. Numerous Ribes infections were located in this county in 1917, but none were found in 1918. The field work is under the supervision of Messrs. Bartelt, Haber, Wenzel and Winter. The weekly news bulletin of blister rust activities in the State, started last year, is again being issued regularly this year. This bulletin keeps the men in touch with the progress of the work and the idea is worthy of being followed in other states.

At Pine City, all white pines were eradicated in a three acre lot except five large trees. At Pokegama, the 2 infected trees found in 1917 were cut in March 1919 by the owner. The 2 infected trees found at Rock Creek in the fall of

1918 were cut by the owner. At Rush Lake, eradication has been going on since January 20. All white pine reproduction up to 3 inches D.B.H. has been cut and burned. The lower branches on large trees have been cut off and the thick parts of white pine stands have been thinned where results would be beneficial. This eradication was carried out on an area of about 110 acres. At Afton, eradication of white pine consisted of cutting and burning all reproduction up to 3 in.D.B.H. on about 40 acres. Two large trees were found with aecia on April 22. Aecia were found at Rush Lake on April 23, and at Maple Ridge April 25 and 26.

Other States.

Mr. Hardin began field work in Ohio April 1, and now has three assistants to aid him. Special attention will be paid to inspections around Akron and Painesville, which are sites of former infections. The early survey for the rust on pines in Akron has already been completed.

Mr. Miles is in charge of the inspection work in Illinois and Indiana, assisted by two men. Shipments of suspicious stock, which have never been inspected, will be traced, and an examination of the large plantings of white pine will be made in both states.

In Iowa, nurseries, nursery "leads" and the larger pine plantings are being examined by Mr. Rumbough with the help of one assistant. Scouting of this nature will also be conducted in North and South Dakota, Nebraska and Kansas. In Tennessee and Kentucky particular attention will be given to native pine and Ribes while in Missouri only the larger pine plantings will be inspected.

WESTERN DIVISON

On April 23 and 24 a two days convention was held at Portland, Oregon, to consider the problem of the white pine blister rust as it affects the Pacific and Rocky Mountain States. The meeting was held under the auspices of the Advisory

Board of the American Phytopathological Society and was presided over by Professor H. P. Barss, of Oregon, a member of the Board. About eighty persons were present comprising plant pathologists, foresters, representatives of state plant pest commissions and owners of timber land, particularly sugar pine and western white pine, Resolutions were passed pledging support to the continuance and enlargement of the white pine blister rust work in the far West. A movement was inaugurated to stiffen up state quarantines on the movement of pines and Ribes west of the Mississippi and working towards the vigorous local enforcement of the Federal quarantine which prohibits shipment of pines and Ribes west of the Mississippi Valley;

Scouting in the western states is now in progress under Dr. Meinecke, Dr. Long, Dr. Weir and Dr. Bethel. Mr. G. B. Posey has taken up work in the western district, and will be in charge of scouting for the blister rust after July 1. Fourteen or more scouts will be employed this season in the Pacific Coast and Rocky Mountain states. No undoubted infection of white pine blister rust has yet been found west of South Dakota but an outbreak in southern California of what is apparently Cronartium occidentale has caused considerable concern.

Field assistants have been requested to take the Civil Service examination for Assistant in White Pine Blister Rust Eradication. A letter dated May 16, 1919, from the Civil Service Commission to the Secretary of Agriculture explains the reason for this request. The letter, in part, is as follows:

> "The Commission ... hereby grants authority, under section 2 of Rule VIII, for the necessary number of temporary appointments of suitably qualified persons, on condition they immediately file application for the examination and the appointments be promptly reported to the Commission by letter; also on condition the Department submits to the Commission a requisition for certification which shall cover all of the vacancies to be filled by temporary appointees, in order that certification may be made as eligibles are obtained from the continuing pending examina-

tion for this position. Just as soon as eligibles are furnished, the temporary appointments should be terminated."

Only field assistants are required to pass this examination, the ruling does not apply to foremen, laborers or men appointed with the title of "Agent", (i.e. men whose salary or expenses are paid by a cooperating agency). It is hoped that the men who have been asked to take this examination will do so promptly, to avoid disorganization of our work in mid-season.

The Maine Forestry Commissioner has sent out a card with each shipment of white pine stock from the State nursery, warning planters of white pine of danger from the blister rust and urging protection by the removal of currants and gooseberries from the vicinity of the area to be planted. This warning is timely, and other nurseries in the eastern white pine area should follow suit. A copy of this card can be obtained on application to Professor John M. Briscoe, Orono, Maine.

Blister rust control in the North-eastern States, where the disease is generally distributed, depends mainly upon the thorough and inexpensive eradication of wild gooseberries and currants within a third of a mile of the pines to be protected. The removal of cultivated bushes must be secured, through educating the public, and is meeting with success wherever the wild Ribes are first carefully eradicated by competent crews. We are gradually working out improvements in methods and at the end of this year should be in a position to instruct pine owners in the most practical manner of protecting their pine stands. Through the system of checking now in the use, it has been demonstrated that a competent crew will uproot at least 95% of the wild Ribes bushes at a reasonable cost. With the digging tools now in use, the crown and roots of the plants can be gotten out and

sprouting prevented. Preliminary scouting to locate Ribes has proved practical in sections where Ribes are not generally distributed, reducing cost without sacrificing efficiency. Production of seedlings is lessened by destroying the fruit. In short, this work is succeeding because many men are thoroughly interested in perfecting present methods of eradication. It is increasingly clear that these methods must be changed to meet new conditions. Intelligence, energy, and perseverence are gradually solving the problem of 100 percent removal of Ribes at a cost that permits commercial production of white pine to continue.

In this connection, Mr. E. C. Filler makes the following useful suggestions as a result of his observations in the field:

Lost motion due to some of the men standing idle in line while one man was pulling bushes was overcome by having the foreman take the place of the man who stopped to pull the Ribes and the line going forward. When the man had the bushes pulled, he checked in back of the line until he reached it, then changed places with the foreman. When two men stopped to eradicate Ribes, the others went ahead a short way to locate and pull up bushes or checked over the ground for a short distance in back of the line. If several bushes were found on one man's strip, the lineman marked the line and all the men came over to help eradicate the Ribes.

There seems to be a tendency on the part of the crew men to look for Ribes within a foot or two of their feet. We found that when the men looked ahead of them about six feet they were able to do more effective work and were less tired at night.

The best method we have found for marking the line seems to be a combination of broken branches, pieces of newspaper stuck on the brush, and small pieces of paper scattered on the ground. The only time paper is scattered on the ground is when the line takes a bend, or going through a pine type or open pasture where there is practically no undergrowth. As a general rule, the man marking the line can cover at least half as much territory as the other men, while the one following the line can usually do three quarters of a strip effectively. Pieces of paper are easily stuck on the branches of conifers and made to stay there by slitting the paper a few inches and then making another short slit at an angle to the first one. By using pieces of paper on the brush the men were able to see their line ahead of them for quite a distance, thus they were able to run straighter lines and avoided the tendency to skip or duplicate territory.

When the strips run across walls and fences, I have found that the men miss many Ribes at these places, even after being cautioned when they arrive at that point. It seems necessary in order to do effective work that these walls be covered a second time, by two good men following along parallel with them one on either side.

A foreman or supervisor cannot expect careful work from a crew unless systematic checking is done regularly. In running a check strip it seems advisable to change the position of the men in line so that one will check the work of the other.

Ripe fruit which would fall on the ground and germinate we disposed of in the following way: The foreman carried a small paper bag tucked in back of his belt. When fruit was found, the foreman stripped off the berries and put them in the bag. At night the bag of berries was destroyed. This method took very little time and worked effectively.

The following directions for checking have been given to New York crews by Mr. A. B. Brooks:

"The following method is recommended for use except in cases where larger areas with known acreage are available, the same having been worked by the crew without their knowledge of the purpose to check it later. Where no other method is followed, the check outlined below should be used at least three times a week, and on various types of ground.

The Quarter Acre Check.

1. At any time during the day's work when the crew is eradicating in a type which the foreman wishes to check, he halts his men, has them face about and then takes his position in their rear. They all go forward over ground just worked, collecting the bushes that are pulled but pulling none that are left. The foreman paces the distance and again halts the line when they have covered one-fourth acre.

2. Each man now counts his bushes, examines the leaves hastily for infection, and reports to the foreman who makes a record on page 4, form B. R. 1.

3. The crew then re-covers the ground, pulling the bushes that were left the first time over. The number is recounted and a record made by the foreman in the space provided on form B. R. 1. If it is desired to make additional checks of the same ground, this operation can be repeated, pulling bushes that were left both ways - making the second and third checks.

For the convenience of those making this check, the following table is given:

TABLE SHOWING NO. OF PACES OF 3 FEET REQUIRED TO COVER 1/4 ACRE, WITH VARIOUS SPACING AND NUMBER OF MEN.

Area	No. of men in line	Spacing of men (No. of feet apart)	No. paces (3 feet)
1/4 acre	5	6 feet	151
1/4 "	6	6 "	121
1/4 "	7	6 "	101
1/4 "	8	6 "	86
1/4 "	5	8 "	113
1/4 "	6	8 "	91
1/4 "	7	8 "	75
1/4 "	8	8 "	65
1/4 "	5	10 "	91
1/4 "	6	10 "	72
1/4 "	7	10 "	60
1/4 "	8	10 "	51

This table is based on the fact that the two outside men cover only half as much ground as the others.

Record of the time required for making the above check must be kept and recorded on B. R. 1."

It is hoped that a news bulletin can be sent out each month but in order to do so, it is necessary for each man to send news notes to the Washington office from time to time. If you have any items of special interest regarding our work, please send them in and help "George" with the next letter. Will not some one contribute suggestions on the best methods of scouting for the disease?

Office of Blister Rust Control
Washington, D. C.
June 16, 1919

CONFIDENTIAL NEWS LETTER

Issued by

The Office of Blister Rust Control

Vol. 4.

1920

BUREAU OF PLANT INDUSTRY

U.S. Department of Agriculture

June 16, 1920.

CONFIDENTIAL NEWS LETTER FOR BLISTER RUST EMPLOYEES

(Not for Publication)

The present season has been very backward and the Ribes bushes did not leaf out so early as usual, hence the eradication work was slow in starting. However, control work is well under way in all cooperating States at the present time.

It is planned to issue a monthly news letter this year. To make this possible, the cooperation of all employees will be greatly appreciated. Drop a post card or letter to the Office of Blister Rust Control when you have an item of news that will interest others in our work.

Maine. Two scouts have selected Ribes eradication areas and are now doing preliminary scouting. The towns of Waterboro, Hollis, Acton, and Lyman in the southeastern part of the State have been worked. Professor Briscoe started two crews working June 1st in areas selected by the scouts.

State Forester Cook, of Massachusetts, State Forester Foster, of New Hampshire, and Messrs. Perry and Filler recently visited the Kittery Point infection area. There are more dead trees and dead tops, due to the blister rust, than in previous years, but no infection can be found that took place since the Ribes were destroyed in 1916.

New Hampshire. Five crews are working in the vicinity of Keene. Mr. Corliss is supervising this work, assisted by Mr. King, who will act in the capacity of a State Inspector. Considerable private cooperation will probably be obtained in this vicinity. Fifteen hundred dollars have been subscribed for cooperative control work in the town of Center Harbor. The owner of the estate that employed several New Hampshire foremen through the winter, agreed to expend at least $1200 on Ribes eradication. This man owns several thousand acres on which Mr. Newman has started work with two crews.

The mapping of a pine infection area at Newbury is being completed by Mr. Endersbee. The infection on pine has spread in a northwest direction from a patch of cultivated Ribes which contained a large number of black currant bushes. Results show clearly that the spread can be traced definitely from the currants at the original starting point.

In a 41-acre pine lot at Littleton, containing a total of 5442 white pines averaging 6 inches in diameter, 3014 or 55 per cent of the trees are infected with the rust. This infection is entirely due to wild gooseberries, which average 30 bushes per acre. The oldest infection found on pine in this region is estimated to have started in 1906, or 13 years ago. Strip surveys a rod wide, totaling 22-5/8 miles in length, were run out north, south, east, west and southwest from this pine lot across the surrounding country. Out of 2896 pine trees growing on these strips, 25.5 per cent have been attacked by the disease. In addition, 1461 pines were inspected in 33 widely scattered quarter-acre plots, and 41 per cent were found infected. Thus, in an area 8 miles wide and 9 miles long, a total of 9,799 pines were examined and 4,359 trees, or 44 per cent, found diseased. Since the strip lines give a fair average, it appears that at least one-fourth of the pines in 72 square miles covered by the survey in the Littleton region are infected with blister rust. On another strip line 30-7/8 miles long, run from Lisbon to Woodsville and Piermont, 2.4 per cent of 6,758 trees were diseased. This shows that infection is progressing rapidly, and that pine owners should lose no time in destroying currant and gooseberry bushes in the vicinity of their pines.

Messrs. Frost, Richards, Francis, and Odione spent the latter part of May eradicating wild Ribes in the Temple infection area.

Vermont. Mr. James E. Riley, formerly employed on blister rust control work in New York State, took charge of the field work in Vermont on May 5, under the direction of Mr. W. G. Hastings, the State Forester. Two or three men are still employed on pine survey work. One crew and a preliminary scout are engaged on eradication work on State land at Sharon, and some private eradication work has been started at Enosburg Falls. It is expected that private cooperation will be obtained in other parts of the State. Eradication work is also in progress on the State plantation at Plainfield. On a rod wide strip line run from Wells River to Barnet, Vermont, a distance of 14 miles, 1509 trees were examined, of these 104 or 7 per cent were infected with blister rust. The age of the oldest infection found was 10 years and the trees averaged 3" D. B. H.

Massachusetts. Two crews are employed at Petersham under the direction of Mr. White. Mr. Perry obtained sufficient private cooperation to keep the crews working there during the entire season. Plans have been made to complete the private cooperative work at Boxford during the coming season. The State Forestry Department is planning to start Ribes eradication work on the State forest land on June 1st.

The Massachusetts Legislature has sent to the Governor for signature, a bill providing for the expenditure of three million dollars over a period of fifteen years for the purchase and reclaiming of 100,000 acres of land, which will be largely planted to white pine.

Mr. Allen Director, Division of Plant Pest Control, State Department of Agriculture, has furnished nurserymen with the following card:

WARNING

Do not plant currant or gooseberry bushes in situations within 900 feet of white pine, as these bushes transmit the white pine blister rust.

Mr. E. C. Filler reports finding fruiting pine infections at Ipswich on April 14. One tree was found fruiting on the north side of the trunk, and another on the south side. The diseased bark had a marked orange-yellow color. In a half-acre plot containing pasture pine, 40 per cent of 133 trees were badly diseased. In Plot 4, west of the Ipswich area, an 18-20 year old tree was found with the top broken off 6 feet above the ground, due to a 9-year-old infection on the trunk of the tree. 4-3/8 miles of strip line were run by Messrs. Francis and Hodgkins in the western part of the Ipswich area. On the strip line they examined 826 trees and found 50 (6 per cent) infected. Nine plots were also laid out along this strip line. In these plots a total of 719 trees were examined and 172 (24 per cent) found diseased. Out of a total of 1595 trees in the strip line and outside plots, 222 (14 per cent) were found diseased. The oldest infection found was 11 years and the youngest 3 years.

Messrs. Endersbee and Frost spent a total of 226-3/4 hours on mapping and estimating pine in the town of Duxbury. Of this, 141 hours were spent on actual mapping, the rest of the time being divided among the projects Office, Travel, and Miscellaneous. Figuring the wages and expenses at $6.00 per day per man (as a standard for comparison) the per acre cost equals $.0109. On this basis, the cost for the time actually spent on mapping and estimating equals $.0067 per acre. The total cost per acre figured on the basis of actual salary and expenses, equals $.012, and for the mapping and estimating, the cost was $.0075 per acre. While conditions were favorable to the work, the cost per acre was lower than was expected. Considering the value of detailed type maps in planning and directing Ribes eradication, checking, and the educational value of the additional data obtained on location, amount and value of pine growth, it pays to have such maps for each eradication area.

Rhode Island. During the months of October and November, 1919, several experiments were tried by Mr. Sheals to test the practicability of using dip and fuel oils as a spray to kill cultivated Ribes. Applications were made to the crown of the plants, to the foliage, and to crown and foliage. In several cases Ribes were cut off close to the ground and the exposed newly-cut wood was sprayed. All experiments were carried on in sunny weather. In many cases, the plants were defoliated (at least 75 per cent of the leaves were shed).

No. of demonstrations	Oil used	Method of Application	No. of man minutes	Species of Ribes: G.B.	Red Cur.	Blk. Cur.	Flow. Cur.	No. of plants killed	Partially killed but sprouting from crown	No. of Ribes apparently unaffected by spray
1	Dip	Crown & foliage	3	4	4			4	4	
2	"	Crown	8	5	6			0	3	8
3	"	"	5				1			1
4	"	Crown & foliage	20		12	3		0	3 (black)	12
5	"	Crown	5				1			0
6	"	Crown & foliage	8				1			0
7	"	Crown	15	1	12					13
8	"	Foliage	45	16	52					68
9	Fuel	Crown & foliage	20	2	18			2 red cur.		18
10	Dip	*	50		48			45	3**	
11	Fuel	*	32		27			27		
12	Dip	*	48		44			42		2
13	Fuel	*	12		9			9		
14	"	*					2		2**	
			271	28	232	3	5	129	15	122

*Ribes cut off close to ground and exposed wood sprayed.
** Sprouts coming from a small branch that was not cut. Work done with an axe and the branch was driven in the ground and not cut off.
*** The main part of the plant was killed but in each case two small shoots were coming up from the roots about 2½ feet away from the crown of the plant.

Conclusions

(1) All demonstrations were carried on in the late fall when plants were partially defoliated so the results can be considered average only for the fall season.
(2) Either fuel or dip oil sprayed on the exposed wood of Ribes which have been cut off close to ground will, in practically every case, cause a kill.

Five scouts are now working in Rhode Island under the direction of Mr, Sheals. Mr. Sheals will resign July 1 to accept a position with the Rhode Island State Board of Agriculture, but will continue to supervise blister rust control work, in addition to his new duties.

Connecticut. Mr. Pederson has resigned. He was engaged on pine survey work in Connecticut and developed some improved methods, with excellent results. He has taken up new work with a New York lumber company. Ribes eradication work is now under way in Connecticut, at Norfolk.

New York. Two eradication camps have been established in New York. One is located near North Hudson, in Essex County, where 20 men have completed an experimental planting of about 125 thousand white pine trees. The Ribes are now being removed within the planted area, except that certain groups of infected bushes are left with a view to determining the amount and rate of spread of the blister rust: (a) From skunk currants in a swamp,
(b) From a single wild gooseberry bush in the open,
(c) From a clump of wild gooseberries in the open,
(d) From a clump of wild gooseberries under a popple screen.
The other camp began operations June 3 in an extensive plantation on State land at Goldsmith, Franklin County. All Ribes are being removed from this plantation.

Messrs. Brooks and Browning found the uredo stage on skunk currant and wild gooseberry bushes at North Hudson on June 11.

On Lake George the mile-wide Ribes-free strip extending for over 10 miles along the west shore is being carried northward. The cooperative funds subscribed in the past by Lake George owners were entirely exhausted last year, making it necessary to begin work on a small scale this spring. Henrietta Hudson, the well-known expert in color photography, started the year's work on the Lake, by contributing $100, and by donating her services in the preparation of a set of slides and stereos. Additional contributions are expected soon.

At Lewis and Deerhead, Essex County, two crews have begun work under an agreement whereby the owners provide one-fourth the labor, or contribute one-fourth the total cost of eradication. About two miles west of Schroon Lake, an area has been selected as a place for conducting an eradication camp for young men from the high schools of the State. The camp will be in operation after July 6.

About 21½ miles of rod-wide strips were run at Lewis and Deerhead, radiating out from a center near Deerhead. Approximately 25,000 trees were inspected on the strip lines, and the percentage of pine infection was found to be about 10.9. In some places it ran as high as 74 per cent. Complete information on this work will be available later.

Mr. A. B. Brooks has supplied the following data on the value of white pine in New York State. The figures were compiled by H. E. Elwell, assisted by an expert timber estimator. They are for young pine only. Values are placed from the standpoint of investment.

Essex County

White pine	1' - 6'	$5.00 to	$10.00	per acre
" "	6' - 12'	10.00 "	15.00	" "
" "	12' - 30'	15.00 "	25.00	" "
" "	30' - 8" diam.	25.00 "	40.00	" "

A pine survey covering a large part of Warren County has been completed except for the tabulating of data, etc. The estimates of the per acre value of white pine are given bb Mr. Brooks as follows:

Pure pine, about $300
Immature pine above 12 years old, $17.00 - $19.00
Mixed mature stands, average, $63.00
Mixed immature pine, $2.00 to $5.00

Prof. Burr N. Prentice has begun educational work to arouse pine owners to the necessity for promptly uprooting wild and cultivated Ribes. He will hold meetings with pine owners in churches and school houses, and will exhibit motion picture films on blister rust work. He is equipped with a Ford car containing a small electric generator that operates a projector. At these gatherings the pine owners are given a franked post-card addressed to the State cooperator, reading as follows:

New York Conservation Commission
In Cooperation with the Bureau of Plant Industry
United States Department of Agriculture

WHITE PINE OWNERS, BEWARE! White pine blister rust is found throughout the pine regions of New York. Your white pine stands will be destroyed UNLESS YOU DESTROY CURRANT AND GOOSEBERRY BUSHES. Blister Rust must grow on leaves of these bushes before the disease can harm pines. By destroying wild and cultivated currant and gooseberry bushes within 200 to 300 yards of your white pine, you save your trees.

1. Go over the ground carefully so that you find every wild currant or gooseberry bush.

2. Pull bushes out by the roots. Cutting them off does no good.

3. Cultivated black currants are especially dangerous. It is unlawful to grow or sell them.

Show your interest in saving your pines by commencing to carry out the above suggestions at once.

The United States Department of Agriculture desires to secure more complete records of the extent to which this work is being carried on by private individuals. Fill in the blanks below and mail. No postage is required.

I pulled up wild currant and gooseberry bushes from about _____ acres this year. I destroyed _____ cultivated bushes and _____ wild bushes.

(signature) _____

(Date) _____ (Address) _____

Wisconsin. Ribes cynosbati was the principal species found in 1919, as in preceding years, though oxyacanthoides (more likely hirtella) triste, floridum, prostratum, vulgare, nigrum, and gracile, were also found infected. Ribes gracile was found diseased for the first time in September, 1919.

Mr. H. J. Ninman reports that on April 19, 1920, he found about 5 per cent of the buds on the wild black currant bushes in the Deer Park infection area, just breaking open. They were somewhat retarded by a few days of cold weather. On April 23-24, it was found that most of the buds on wild black currant bushes, and also R. cynosbati and R. gracile were beginning to open. On April 24 one R. Prostratum was found, having leaves about one-fourth inch in diameter. On April 22 was found the first visible sign of the cracking of the bark of white pine, due to blister rust. Two days later, the bark was cracked nearly 1/8 inch, and the blister was just beginning to push forth.

Mr. Ninman is in charge of blister rust work in the State. Up to about May 8, diseased pine centers in Barron and St. Croix Counties were being eradicated to decrease the spread of the rust eastward. A drew of ten men was under immediate charge of J. R. Jacobson. Eradication of Ribes was started about the 10th of May in the Interstate Park at St. Croix Falls. Local cooperation has been secured with owners of several thousand acres of land, in which young pine stands are located.

Minnesota. Mr. P. O. Anderson is in charge of blister rust control work with headquarters at the State Forester's Office, St. Paul. Ribes eradication began about the 10th of May in the Interstate Park at Taylors Falls, with one crew of four men. Efficiency of the crew on May 20 reported from 92 to 96 per cent. The work in the area is completed, and the crew has moved to Itasca Park. Mr. Plufka is crew foreman.

A bulletin on white pine was prepared the past winter by Mr. Anderson and Mr. Johnson. This will appear soon as a publication of the State Forester's Office.

Professor Ruggles, the State Nursery Inspector, has furnished nurserymen with the following card to enclose with shipments of planting stock:

NOTICE TO
PLANTERS OF WHITE PINE

The white pine blister rust, one of the worst diseases of white pine, appears to have become established in Minnesota. In planting healthy white pines this disease need not be feared, provided no currants or gooseberries are within 200 to 300 yards of your trees.

REMEMBER

Blister rust cannot spread directly from pine to pine. If there are no currants or gooseberries in the vicinity there will be no spreading of the disease from one pine tree to another.

Michigan. Scouting for the blister rust will be carried on by Prof. Alban Stewart and one assistant.

General. Mr. F. Kolpin Ravn. Professor of Plant Pathology, Royal Agricultural College, Copenhagen, called at the Washington office recently to obtain information in regard to the blister rust in the United States. He states that there are very few wild Ribes in Denmark, and that for this reason, no control methods, such as Ribes eradication, have been tried in that country. The forest area of Denmark is very small. Several years ago, white pine was planted, but most of it has been killed by the blister rust, so that there is comparatively little white pine in the country. Most of what is there, is ornamental. Their chief trouble was due to infection of the pine in the nurseries, as these were located usually around houses near gardens, where there were cultivated Ribes. The trees naturally became infected, and after they were planted out, died. Any white pine which they intend to grow hereafter will be planted in a nursery several miles from any Ribes. If the stock is clean after it leaves the nursery, there is little danger of infection when it is planted out, because of lack of wild Ribes. The white pine is not used much as a forest tree in Denmark, because the forest area is small, and the other trees with which it must compete, such as the oak, spruce, and fir, produce wood which is more useful to them than the wood of the white pine.

Mr. W. S. Moir is securing data on blister rust control methods used in Europe. He has found much of interest and value that will be reported at a later date.

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It is interesting to note the high rank taken by the New England States in white pine production in 1918. The following figures are from the 1918 report on lumber production, published by the Forest Service:

Minnesota	42.2%
Maine	12.1%
Idaho	10.6%
New Hampshire	9.6%
Wisconsin	6.4%
Massachusetts	5.0%

****

Dr. H. H. York, Professor of Botany, Brown University, made the following interesting observation last year: On June 9, 1919, a piece of cane of skunk currant was found, measuring 17 inches in length. It had been thrown on the ground in the summer of 1917. During the season of 1918, this cane made a growth of 23 inches, and the growth for the 1919 season was 20 inches. The total length of this plant was 5 feet. There were between 20 and 25 lateral shoots. Those of the 1918 growth had flowers. Dr. York also found that skunk currants may fruit freely the third year, from seed.

****

Numerous violations of the Federal quarantine prohibiting shipment of pines, currants and gooseberries to points west of Minnesota, Iowa, Missouri, Arkansas, and Louisiana, have been discovered during the past season. These violations are being reported to the Federal Horticultoral Board and prosecutions will follow. Scouting for the blister rust is in progress in the far West but no signs of the disease have been found.

Several Ford ambulances have been loaned to this office by the Bureau of Public Roads. Those which were to be shipped to the New England States and New York from South Amboy, New Jersey, have been held up because of the freight embargo to points in the above-mentioned States. It is hoped that some other arrangement can soon be made whereby the cars can be driven overland to States to which they were assigned.

****

The Office of Blister Rust Control would be glad to have reported any pine infection centers due to single wild gooseberry bushes or small isolated skunk currant patches, as well as centers due to cultivated Ribes. If possible, leave the Ribes undisturbed until the area can be carefully plotted. This data is much needed to definitely fix the infecting radius of various species of Ribes under different conditions.

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Do not overlook the necessity for frequent checks of Ribes eradication. Efficient work is systematic work, and checking is a safeguard that guarantees uniform efficiency. Last Year's record was high, but this year we are going to do still better.

TCP.

No. 2.

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF PLANT INDUSTRY

Washington, D. C.

Blister Rust Control

July 20, 1920.

Confidential News Letter for Blister Rust Employees

(Not for publication)

In the June news letter, employees were requested to send the Office of Blister Rust Control any news items that would be of general interest to field men. Very few have complied with this request, but it is hoped more news will be received for the August number. Your cooperation in this matter will help to make a better and more interesting news letter.

We have now reached the middle of the field season and so far have made excellent progress. With every one continuing to do his share, last year's high record for efficiency will be exceeded and a greater percentage of Ribes removed. Check your Ribes eradication work frequently to insure a high, uniform standard of efficiency, and all cooperate in making this our most successful season.

Maine. Two eradication crews and two preliminary scouts are at work near Hollis. Professor Briscoe is personally supervising this work. Messrs. McKechnie and Andrews are engaged on pine survey work in the town of Elliott, and Mr. Frost reports that they are doing exceptionally good map work. They expect to finish the map work in this town about the middle of July.

New Hampshire. This season's Ribes eradication work has been completed in the following nine towns: Marlboro, Westmoreland, Swanzey, Chesterfield, Alstead, Peterboro, Bennington, Keene, and Langdon. The unworked portion of Peterboro was finished this season, thus adding another entire township to those that have been completely worked by New Hampshire blister rust crews. Mr. Corliss is now supervising the work of six crews in the following towns:

Goshen, Hillsboro, Jaffrey, Dublin, Fairmount, and Hancock. Mr. Newman is directing the crew work at Holderness, Tuftonboro, Center Harbor, Wolfeboro, and Littleton. Each crew has at least one preliminary scout. Mr. Newman is planning to start two or three crews in the vicinity of Lisbon in order to eradicate the skunk currants before they become defoliated. Lisbon is located in the White Mountain region of New Hampshire.

Mr. Francis is now engaged on educational work at Hebron. Mr. Endersbee has completed the study of the Newbury infection area and the results of this work will be ready to send out in the next news letter.

Vermont. Eradication work has been completed at Sharon, and also on a small area at Pittsford. The latter consisted of private cooperation and the work was finished in about two weeks. One cooperator at Proctor hired a crew of men to eradicate the Ribes on his land and the State furnished Mr. Teachout to supervise the work. It took about two weeks to complete this area. Crews are now working at Enosburg and at West Rutland. The work at Enosburg is private cooperation, while at West Rutland the State is protecting some of its pine plantations by eradicating the Ribes.

Massachusetts. In the town of Petersham, three regular crews are at work and a fourth crew, a two-man unit, has been assigned to stone-wall work. This outfit is doing excellent work cleaning up along all roadsides, stone-walls, fence rows, gardens, etc. This method fixes responsibility and seems to be the solution of this phase of control work. A scout is being employed to locate Ribes habitats in advance of the crews and is doing good work in eliminating non-Ribes areas. Large areas of skunk currants and considerable numbers of gooseberries are being found, the crews having pulled to date, a total of 517,500 Ribes. This figure exceeds the total number pulled by all the crews in the state during the entire season last year. Detailed records are being kept for each section of the town, to be tabulated and correlated with data secured last winter during the preparation of the detailed type

map and estimate of the town.

A seven-man crew is operating on the Otter River State Forest, which is located in the town of Templeton, Winchendon and Royalston. This crew is in charge of the Superintendent of the Forest, acting in the capacity of a foreman. Acres of skunk currants are being encountered by the crew but good results are being obtained, an average eradication percentage of nearly 99% having been maintained thus far. From June 14 to July 15, this crew destroyed 144,900 Ribes.

Another crew handling control work upon a few scattered areas, has completed Ribes eradication upon the North Andover control area; established another small control area in Topsfield, and is now at work upon a large estate in the town of Newburyport.

July 16 a crew will start work upon two small projects in the towns of Hubbardston and Princeton.

TOTAL NUMBER OF RIBES PULLED by all the crews from the beginning of the field season May 3 to July 15 - 672,800. Mr. F. Gould reported finding the uredinial stage of infection on Ribes at Topsfield on June 18.

Dr. Pickler and Mr. Hodgkins have started checking the results of Ribes eradication at Lenox, Mass. The Ribes were removed on this area in 1916 and it has never been reworked. The Lenox area was one of the first places where general Ribes eradication was tried as a method of controlling the blister rust. Messrs. Pickler and Hodgkins will determine whether any new pine infections have taken place and gather data on the efficiency of the 1916 eradication work.

Mr. Perry has received $1880 this season from individuals who desire to cooperate in the eradication of Ribes on their property. These pine owners

realize the danger from blister rust and desire to protect their pine trees. The State Forestry Department is also spending $500 for cooperative Ribes eradication in protecting State plantations of white pine.

Rhode Island. Six men have been working at Coventry during the present season under the direction of Mr. Sheals. This town will be completed in about a week and Mr. Sheals then plans to start work in the town of Gloucester.

Connecticut. Mr. Filley has one crew at Colebrook working under the direction of Mr. Hicock. This crew is camping on the area.

New York. Twelve crews are now in the field, distributed as follows: one at Bolton, three at North Hudson, three at Franklin, two at Lewis, and three at Schroon Lake. Professor Prentice is using 11 by 14 inch, white, cardboard posters in connection with blister rust educational work in New York State. The posterreads as follows:

U.S. Department of Agriculture
In Cooperation with
NEW YORK CONSERVATION COMMISSION

MOVING PICTURES

FREE

A Lecture, Illustrated with Colored Slides and Motion Pictures will be given

At _____

Date _____ _____o'clock P.M.

An entertainment to assist owners of white pine in saving their trees from the blister rust, a disease which is already found in many parts of the State.

Various other Conservation features will be shown by film.

EVERYBODY INVITED.

An acme portable motion picture projector operated by portable lighting plant is used to show the motion pictures. These include pictures of the white pine blister rust. The portable outfit is working fine and giving excellent results.

Wisconsin. The eradication work at Lewis, Polk County, was completed about the first of July. Two crews have moved to an area north of Amery and are working under the direct supervision of Mr. Ninman. The men are camping out, since the distance to town is too great for convenient transportation. Mr. Ninman's improved farm tool" is proving to be quite efficient in uprooting Ribes. Mr. R. G. Pierce spent part of July 13 and 14 inspecting the work of the crews at Amery and found that a high per cent of efficiency was maintained by both crews. Mr. Ninman is planning on taking two men to the Menominee Indian Reservation this week to cooperate with the Indian Service in the Eradication of Ribes around the old infection center at Keshena. Mr. Jacobson and Mr. Mihills are scouting in the State to locate advance infections of the blister rust.

Minnesota. During the early part of the year a bulletin on the growth and distribution of white pine in Minnesota was prepared by Parker O. Anderson and C. H. Johnson, of the State Forest Service. This bulletin will be ready for distribution in a short time.

The colored blister rust circular has been mailed out to all high school superintendents and principals in the State, about eight hundred in number. Three thousand cards containing the following notice have been prepared and several copies sent to all nurseries in the State growing and selling white pine. Copies have also been sent to all nurseries shipping into Minnesota, except those in States from which 5-leaf pine are prohibited by quarantine.

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REMEMBER

Blister rust cannot spread directly from pine to pine. If there are no currants or gooseberries in the vicinity there will be no spreading of the disease from one pine tree to another.

Eradication work at Interstate Park, Taylors Falls, was completed on May 22, 1920. The area worked consisted of 35.4 acres, and contained 5,259 Ribes, nearly all of which were Ribes cynosbati. Marking with wire and cloth was preferred to the paper method and the line running showed good results. Other methods will be tried later on.

The eradication crew at Itasca State Park consists of four men and a foreman. The work is under the direction of Leonard Plufka, and on May 28 Ribes eradication was started on a new control area in Hubbard Ravine. This area is wooded and has the different species of the Park area well represented. Pure stands of Jack pine and scattering stands of Norway and white pine are found in different sections of the ravine. The predominating types are hardwoods, the major portion of which are poplar and birch. In places, the ground cover is very thick brush composed mostly of hazel and briar. This mixture, together with windfalls, dried brush and old logs, often makes progress exceedingly difficult and slow. In other places, young poplar reproduction about six feet high interferes with the progress of the crew. While the Ribes are comparatively few in number, they are mostly well developed bushes from two to three feet in height, very stalky and large, with fully developed leaves.

Small seedlings are scarce. Most of the Ribes occur in the bottom, flat area, and so far, no disease has been found on either pine or Ribes. It has been the experience in Minnesota to find that in most cases the disease first shows up in places where the air is moist and very hot, and that ravines and draws are the first places where infections are found.

A new crew started eradication work at Jay Cooke Park, Carlton, on June 19 with C. E. Shepard as foreman. Mr. Shepard has since resigned and Mr. Leyden Ericksen is the present foreman.

A number of deputies, working under the State Nursery Inspector, are inspecting the nurseries in the State and also the large towns and cities along the main line of railroad. As yet no blister rust has been reported by them.

Beginning August 1, Mr. Ben Kienholz will scout for advance blister rust infections along the edge of last year's infected area.

Far West. Scouting for the blister rust is in progress in the Far Western States. Messrs. Putnam and Johnson are working the east slope of the Sierras, principally in areas where the pinion and white pine overlap. They started work at the southern end of the range and are working northward. Messrs. Wyckoff and Randall are scouting in southern Oregon and northern California. Mr. Garrett is scouting in Utah and inspecting planted pine and Ribes of suspicious origin. Mr. Goodding is scouting in the five-needled pine area of Arizona, New Mexico, and Colorado, and is also inspecting imported host plants of the disease. Mr. Root is inspecting pine plantings in Oregon and making a thorough survey of the outlying country around Portland for white pine and black currants. He will then gradually work into the native pine lands. Messrs. Renner and Morgan are scouting in the coast counties of Washington, principally in districts with white pine reproduction. Later they will work in Idaho and and Montana under the direction of Mr. Stillinger, who is scouting in Washington

and Idaho. While scouting for the blister rust, special attention will be given to planted pines and black currants, and inquiries will be made for newly imported host plants of the disease. Men scouting where the white and pinion pines overlap will chart areas, where pinions infected with Cronartium occidentale (pinion blister rust) occur near white pines. These charts will give the position of both kinds of pines and also of Ribes. A very careful inspection of the white pine will be made in these regions. No signs of the white pine blister rust have been found.

General. White pine is noted for its utility but perhaps the most unique use to which it has been put is described in the following interesting newspaper article:

Sawdust Diet for Milk Cows Raises Yield.

(Cows fed on sawdust produce more beef and milk, according to experiments which have been conducted jointly by the agricultural department of the University of Wisconsin and the United States forest products laboratory.

"We took white pine sawdust and put it through a treatment that converts the starch into sugar," said O.M. Butler, assistant laboratory director. "Then, in cooperation with the agricultural department of the university, a feeding experiment was conducted. Five dairy cows were kept on the sawdust ration for one month, with the result they increased both in weight and amount of butter fat produced. They were then taken off the sawdust ration and put back to normal feeding for one month, with the result that both their weight and milk supply reduced to about normal. A second time they were put back on the sawdust ration, and again their weight and milk increased.

Mr. Butler expressed the belief that the sawdust from all coniferous woods except yellow pine, which has too much resin in it, can be used for cow feed.)

Scouting for the blister rust in Michigan, Ohio, Pennsylvania, and Maryland, is under way but no evidence of the disease has been discovered. Scouting will start in Virginia July 23 and in New Jersey early in August.

The following communication was published in the American Lumberman on April 24, 1920. It is of special interest, as it gives the viewpoint of a practical lumberman who has seen the effects of the blister rust on white pine and realizes its destructiveness.

White Pine Blister Rust in the East

I wish to reply thru your columns to "A White Pine Lumberman," Who has asked for information about white pine blister rust from a lumberman who has seen it; which seems to imply doubt of scientific statements.

I have been in the woods for over forty years, as lumber operator, cruiser, surveyor, and avocational forester (whatever that may mean), and I have seen pine blister rust.

I can show the inquirer an exhibit of the ravages of the disease which would make him fearful of the future of white pine.

Interested vitally, as I am, in the salvation of white pine, I have made special effort to see for myself the effects of the disease. I have scouted with Government agents; I have been to see the worst infections in New England; I am familiar with methods of fighting the disease, and I have reason to doubt the statement of plant pathologists as to the menace or the remedy. My purpose here is not to describe the disease or results but only to confirm the statements of pathologists as to devastation in New England, particularly in southern New Hampshire, so far as a lumberman can confirm the statements of a plant pathologist. (See Government bulletins.)

The situation in New Hampshire has not been exaggerated; on the contrary, the cold, accurate, scientific statement of fact, devoid of sentiment, seems like understanding the conditions."

Altogether, there are 39 crews now at work in 9 states, making about 250 men employed on crew work. There are also about 20 men employed as preliminary scouts on eradication work.

During the spring, the Department photographer secured some good pictures of various phases of blister rust control work in New England. In a short time a sample blister rust exhibit will be sent to the State cooperators. It consists of a light wooden frame that can be fastened to the wall, with cardboard wings

22 by 28 inches. On two of the wings will be placed photographs, posters, etc., and the others will be left blank, for the addition of such material as the State cooperator thinks desirable. If more of the exhibits are desired for use in the State, they can be obtained at low cost.

Mr. Moir has been making observations on blister rust conditions in Norway and is now on his way to Scotland.

In New York State a checking crew of five men under foreman Andrew Magee, has been organized by supervisor Browning. They will check the Ribes eradication work of other crews and assist with certain parts of special demonstration control experiments. It is expected that the men in this crew will develope into good foremen and they were selected with this in mind. The crew will travel between the different control areas in a ford truck.

Mr. Harry E. Derby has started a second crew near Lewis where small pine owners are cooperating by working allotments of their land. Many land owners in that section are becoming actively interested in blister rust control work.

A. K. Perry reports finding blister rust infection on Ribes at Geneva and Pulaski, New York.

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No. 3

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY

Washington, D.C.

Blister Rust Control

August 21, 1920.

Confidential News Letter to Blister Rust Employees.
(Not for Publication)

While a number of field employees have furnished news items of general interest for this number, yet it is hoped that many more will avail themselves of the opportunity and send in news by September 15 for the next number.

Maine. Two eradication crews are continuing work near Hollis and a Federal inspection report shows over 98 per cent efficiency in crew work. Mr. Frost reports that the pine infection at Brunswick is proving very severe, the infections ranging from 5 to 16 years, most of them being 15 years.

New Hampshire. Twelve crews are engaged in Ribes eradication, six of them in the southern part of the State under supervision of Mr. Corliss, and six in northern New Hampshire under supervision of Mr. Newman. These district supervisors are assisted by Mr. King, who is acting as State Inspector and "Efficiency Expert." The work had been so well recommended that Mr. Pierce made a short trip to New Hampshire and worked on four different eradication crews to learn their most improved methods and pass them on to the Lake States. The points which he found most valuable are:

(1) Naming of the central man in the line as head linesman, who assists the foreman in running the crew, having the men spread out or come closer together according to the density of the bushes, or speed up or slow down.

(2) Small Ribes patches were checked over immediately after working, either by the crew or by a single man to see that no bushes were left.

(3) The value of an advance scout was emphasized in every town. Where a scout had not preceded the crew and where the bushes were few, the crew spread out to a wider spacing of twenty, thirty, or fifty feet.

(4) The superiority of trail paper over other systems of marking was shown.

Mr. Corliss reports a successful plan for reaching many pine owners in towns where cooperation was desired, or where the crews were planning to work. This publicity consisted of securing the cooperation of the local postmaster who placed the colored circular, published by the U. S. Department of Agriculture in cooperation with the State, in each of the lock boxes. This has been tried in several towns and has proved very successful in reaching the public.

Vermont. Two eradication crews and two individual scouts have been working in the Cabot and Ryegate control areas. Mr. Bradder reports that he completed a tract of some 40 acres in Sunderland, another of about 60 acres at Arlington, and has done preliminary scouting on a tract of several hundred acres at Pownal. In none of these was there any indication of blister rust. A report concerning the cooperative funds which have been obtained shows that $327.42 was contributed from five different sources.

Mr. Riley writes that he intends to have an exhibit at several of the fairs. He has been securing a number of photographs showing the various phases of blister rust work.

Massachusetts. A tabulation of types from the map of the town of Petersham, prepared by Mr. White last winter, indicates that white pine is produced on nearly 65 per cent of the town area, 6124 acres of which is pure pine of various age classes, and 9908 acres is pine in mixture with other forest types. Ribes eradication in the town is progressing with good results. With a Ribes content of over 359,000 or 210 per acre, one section of 1714 acres has been completed at an average crew cost of 95 cents per acre. In other sections in which a scout has been able to throw out extensive areas of non-Ribes land, the cost has been as low as 15 cents per acre.

Six eradication crews have been at work in the State. Up to July 31 a total of 888,458 bushes were reported destroyed. This is four times the number of bushes destroyed in the State last year. Checks made during July on 25.8 acres, gave an average of 95.9 per cent of the bushes secured the first time, 4 per cent on the first check, and 0.1 per cent on the second check.

A crew is operating on the Otter River State Forest near Winchendon. The small control area at Hubbardston has been completed and the crew is now working on a small plantation near Princeton. Extensive defoliation of skunk currants on August 6 was reported by this crew. The crew in Newburyport has completed the private work there and is now engaged in the removal of cultivated Ribes near Atkinson Common. Upon the completion of this project, this crew will make an examination of the "Carlisle Pines," a lot preserved by the Appalachian Club for its stand of old-growth white pine.

Rhode Island. One eradication crew has been working at Coventry. Mr. Sheals has been securing some good publicity in the Artgravure section of the Providence Sunday Journal, August 15. Four-fifths of one large page is used to show seven illustrations of the blister rust work. A paragraph from the Sunday Journal accompanying the photographs is worthy of note:

> "Fighting to Save State's White Pine.
>
> Although Rhode Island is not listed among the so-called "white pine States," its merchantable and young white pine growth covers some 145,000 acres, and has a stumpage value estimated at more than $1,300,000 . This is seriously imperilled by the white pine blister, which federal authorities and the State Board of Agriculture are combatting. These photographs, from R. A. Sheals, Assistant State Entomologist, show the ravages of the disease and the methods of combatting it."

Connecticut. A single crew is continuing Ribes eradication in Colbrook, where the spread of pine infection has become apparent. Mr. Hicock is scouting in this town.

New York.

Thirteen crews are engaged in eradication work. Mr. Brooks reports that a camp of three crews of high school boys is located on State land near Schroon Lake. Supervisor Derby has four crews working near Lewis and Elizabethtown, in Essex County, where cooperation has been secured with private owners of pine. One of these crews is working on the Milholland Estate, containing several thousand acres of excellent pine. Mr. Derby states that other pine owners are anxious to cooperate, but that it is difficult to obtain additional labor of the right kind. The checking crew working under Supervisor Browning (which travels in a Ford truck from place to place) has checked the work of all the eradication crews and reports a high percentage of bushes pulled by the regular crews.

Mr. Perry is working in St. Lawrence County, where he has succeeded in interesting a number of owners to the extent that they will begin work at once in destroying Ribes on their own property. Two of the large paper companies, the International and the Diana, will cooperate.

Prof. Prentice has exhibited motion pictures to about twenty audiences in the white pine section of Warren County. Meetings were held in country school-houses and village halls. Many persons attended who had never seen moving pictures before. The average attendance for the first fourteen meetings was 76. An acme portable motion picture projector operated by a portable lighting plant is used to show the pictures. Prof. Prentice is continuing his educational campaign in Essex County.

Wisconsin. Mr. Ninman reports that a single crew has been working in the Keshena infection area on the Menominee Indian Reservation, some of the crew being Indians from the Reservation. A few scattered infections have been found, not over three-fourths of a mile from the original center. The eradication area covers approximately two square miles. This work will be completed about August 28.

Two crews have been conducting Ribes eradication on privately-owned pine holdings near Amery in northwestern Wisconsin. In some cases the owners themselves are destroying part of the Ribes on their pine land, while in others they are paying part of the crew. Wm. Thompson, Jr. is combining the work of field supervisor and advance scout for both crews.

New infections have been located by Mr. Jacobson at Chippewa Falls and Cameron. The State Forest Nursery at Trout Lake in northern Wisconsin was inspected by Mr. Ninman and he states there is little likelihood of any blister rust getting a foothold there because of the almost complete freedom of the area from Ribes.

Minnesota. The crew which was engaged in eradicating Ribes in Hubbard Ravine at Itasca State Park, has completed its work and has moved to the Forest School Nursery. Mr. Plufka has been engaged part of the time in advance scouting. This crew is carrying on experiments in speed and efficiency in Ribes eradication vs. cost per acre, and expects to secure some good data. Work is continued at Jay Cooke Park near Thompson, a total of 15,477 Ribes having been destroyed. An efficiency of over 95 per cent has been secured by this crew up to July 15.

Messrs. Fenley, Ackerson and Ben Keinholz are carrying on general scouting for the blister rust. Most of the survey will be done in the vicinity of last year's most northern infections. The only reported infections are on pine in Chisago County.

Over 150 nurseries throughout the State have been examined for infection, with no evidence of disease being found up to August 11. A second inspection will be made at many of these nurseries, especially where Ribes nigrum is present. It was our experience last year that nurseries apparently free from disease in the early part of the season were found infected in late August and September.

Other States. Mr. Chas. E. Prince is engaged in scouting for the rust in New Jersey; Mr. C. O. Peake, in Illinois, Indiana and Ohio; Dr. Alban Stewart and Paul Young in Michigan. No blister rust has been reported this year from any of these states.

Far West. Scouting is being carried on under Mr. Posey, eight men engaged in the work. Mr. Wyckoff reports that progress is being made in the Ribes garden at Berkeley, thirty-four species now being grown there.

Mr. Posey writes that the reproduction of western white pine (*Pinus monticola*) in the Clearwater National Forest in Idaho is crowding other species out. In this connection, a recent report of the Forest Service (mentioned on the last page of this news letter) states that 75 per cent of the entire stand of the highly prized western white pine is in Montana and Idaho. In the near future the main burden of supplying the saw timber of the country will rest upon the Pacific Coast and Western Montana and Idaho. Of the 20 billion feet of white pine in the region of Idaho, 5 billion feet is owned by the federal government, chiefly in National Forests. The State of Idaho owns 3 billion feet, and 12 billion feet is privately owned.

General. The office has been informed by the Federal Horticultural Board that 42 cases of alleged violation of the blister rust quarantine, No. 26, have been transmitted to the Solicitor of the Department for appropriate action. Mr. Hagan, of the Utah Crops and Pests Commission, reports that three shipments of Ribes from east of the quarantine line have been discovered in Utah, and that the Ribes were either destroyed or returned to the shipper.

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Mr. Moir has been continuing observations on blister rust in England and Scotland, specimens of infected sugar pine and western white pine having been received from him.

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A box exhibit, 30" by 40", with extra panels has been prepared by the Office of Blister Rust Control at Washington, in cooperation with the Office of Exhibits. This blister rust exhibit will be shown on four of the five circuits at which the Department of Agriculture has educational displays.

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The Bureau of Public Roads, which has loaned us Ford cars, reports that they will furnish spare parts, if available, without charge. They do not, however, have tires or inner tubes available.

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Mr. Detwiler has been in the field in New England and New York from July 12 up to the present time, making a general survey with Prof. Cooper, who is studying the ecology of Ribes, and Prof. Young, who is making a critical inspection of methods of Ribes eradication and determining the damage of blister rust on commercial pine stands. Dr. Martin left for the field on August 6 and is taking a trip through New England, New York, the Lake States and to the Pacific Coast.

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The sample display cases which were mentioned in our July news letter have been forwarded by express to the various State cooperators. It is believed that these display cases will be useful at small fairs or in County Agents' offices. Additional cases and wings may be obtained from the Office at Washington.

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Mr. Detwiler reports that a number of comparative observations just made in the field show that in uprooting a patch of skunk currants it pays to start at the extreme outer boundary and work toward the center, lifting the bushes as they are pulled. A straight pull breaks off the top and leaves the underground stem to sprout again. The skunk currant bushes most frequently missed appear to be the scattered ones beyond the margin of the main patch.

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DATA ON RIBES DESTROYED IN JULY, 1920

State	No. of Crews	No. of bushes destroyed by crews and scouts	Wage Cost		Wage Cost per bush
Maine	2	65,996	$1254.10		1.9 cents
New Hampshire	12	643,472	7388.91		1.1 "
Vermont	2	3,136	356.74		11.3 "
Massachusetts	6	454,920	2791.12		0.61 "
Rhode Island	1	4,492	502.40		11.2 "
Connecticut	2	31,537	636.17		2.0 "
New York	13	207,093	5471.89		2.6 "
Wisconsin	3	145,344	881.46		.60 "
Minnesota*	2	20,280	768.65		3.8 "
Total	43	1,576, 270	$20,051.44	Avrg.	1.2 "

*July 16-31 only.

A better method of comparison is the acreage cost of Ribes eradication, but figures in acreage are not now available.

RECENT ADDITIONS TO WHITE PINE BLISTER RUST LITERATURE

New Hampshire

Anonymous - White Pine Blister Rust in New Hampshire, Circular 10, New Hampshire Forestry Commission; 4 p. 1920.

Pennsylvania

Adams, J.F. -Rusts on Conifers in Pennsylvania. Penn. Agri. Exp. Sta. Bull. 160, pp.14-16. December 1919. - The specific location of each of the Pennsylvania infections of white pine blister rust is here given with the date and discoverer. It is noteworthy that no discovery of this fungus has ever been made on any species of Ribes in Pennsylvania.

Rhode Island.

Martin, J.F., Stene, A.E., and Sheals, R.A. - How to Distinguish and Combat the White Pine Blister Rust. Bull. Entom. Dept. Rhode Island State Board of Agric. n.s., No. 1, 38 p. illus. Feb. 1920. - Various types of injury to white pine caused by blister rust and other fungi; insects, as well as mechanical injury, are illustrated.

West Virginia.

Schoene, Prof. W. J. - Inspection for Pine Blister Rust. (Quar. Bull. Va. State Crop Pest Comm. 1 (1920), No. 4, pp. 14,15). - White pine blister rust inspection, which was contined during the summer months of 1913-1919, is here briefly discussed with its bearings upon the production of white pines within the State of Virginia, which are estimated to be worth about $10,000,000.

General.

Detwiler, S. B.- Results of White Pine Blister Rust Contol in 1919. Phytopathology No. 3, v. 10: 177-180, March 1920.

Forest Service publication, "Timber Depletion, Lumber Prices, Lumber Exports, and Concentration of Timber Ownership." Report on Senate Resolution 311, June 1, 1920. This is the most complete report on the timber survey of the country which has been written in recent years. Interesting figures on the white pines of the country are included.

Snell, W.H. - Observations on the Distance of Spread of Aeciospores and Urediniospores of Cronartium ribicola. - Phytopathology 10; 358-364. Studies were made near Rush Lake, Minn. and in the Adirondacks in New York. Observations show that aeciospores of Cronartium ribicola can be blown more than one and one-fourth miles and infect Ribes. Dry weather is likely to prevent general dissemination of the blister rust by urediniospores.

Washburne, J. N. - "White Pine "Flue" . *American Forestry, June 1920. p.343-5.

York, H.H. - Late seasonal production of aecia of Cronartium ribicola. Phytopathology 10: 111 Feb. 1920. On September 16, 1919, at Amery, Wisconsin, a freshly opened peridermium was observed with bright orange-colored spores by Dr. York. Two similar aecia had been seen a day or two previously by Mr. Ninman.

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY
Washington

Blister Rust Control October 25, 1920.

No. 4

Confidential News Letter to Blister Rust Employees
(Not for Publication)

The Washington Office has been transferred from the Council of National Defense Building to Building F, 7th and A Streets N. W. Our work has been greatly delayed through confusion incident to moving.

The Sixth Annual Conference on the white pine blister rust will be held under the auspices of the American Plant Pest Committee at the State House, Boston, November 5-6, 1920.

Mr. W. S. Moir will return to Boston next month. During the past year he has studied blister rust control in Norway, Sweden, Denmark, Belgium, France, and England. He will have much of interest to report. He writes:

> "I cannot emphasize that too strongly (continuing the exclusion of all foreign nursery stock) nor be too severe on evasions of quarantines in our own country. Flexilis and monticola, as well as lambertiana, are easily attacked. An invasion in the West dooms two of our most important commercial species. To say 'doom' is no exaggeration if the wild Ribes in the West are susceptible."

In several other letters Mr. Moir has reported severe damage to Pinus flexilis and P. lambertiana. In May, 1920, Mr. Moir visited the island of Bornholm, Denmark, and reported on the plantations of P. strobus as follows:

> "Today the stands ranging in age from 24 to 40 years and covering more than 100 acres, in different parts of the forest district, present a dismal aspect when compared with the natural, thrifty stands of P. strobus in America. The oldest plantations are about 40 years old, and raised from seedlings grown on the island.
>
> "Blister rust is to be found in every province of the Danish mainland. Currants and gooseberries are present in the gardens over the entire island, but wild Ribes are not common. New blister rust infections on pine have occurred annually on all the plantations for at least 20 years, and in some, for 30 years. The striking feature of all these stands is the severity of loss in proximity to Ribes. They cannot be raised to maturity. The future of white pine, as a commercial species, depends on our ability to immediately cope with the disease. An average of 90 per cent of the trees throughout

the entire tract are dead and diseased. (In some cases the percentage of dead and diseased trees in a stand runs to 100.) Upon our present success or failure in coping with the blister rust rests the continued existence of the American species of 5-needled pines as commercial timber. This problem is vital to every citizen, as well as lumbermen and foresters. A great stride has been made in our present methods of combatting the disease and getting it under control. However, the second Marne is yet to come.

"Looking further, should this same disease reach the native Western stands of 5-needled pines with the same degree of destructiveness with which it has visited the forest Almindingan, the loss would be beyond measure."

Maine. Prof. Briscoe reports that the two eradication crews stopped work on September 15. Two crews and two scouts have been employed throughout the season. Four men have been engaged during the summer on pine survey work. This work closed in September. Messrs. Frost and Fogelman are now scouting for pine infections. They have found the disease scatteringly on pine at various points around Lewiston and Waterville.

New Hampshire. New Hampshire now has twelve crews in the field distributed as follows: Gilmanton, Sanbornville, Sunapee, Keene, Newport, Center Harbor, Derry, Hanover, Laconia, Hebron, Piermont, and Durham. Mr. Newman plans to continue the eradication work in the southern part of the State until the latter part of October. Eradication work was completed in 27 towns for the season. Cooperative funds were appropriated to the extent of $360 in Hebron and $800 in Surry, as a result of demonstration work carried on by Mr. Francis.

New Hampshire has a plan under consideration by which it is hoped to build up a more permanent field organization and to secure additional educational work. The idea is to secure a local man in as many towns as possible, who has had some training in eradication work, so that he may be suitable to act as crew foreman for a portion of each season. He may also be used for a few days at a time during other portions of the year for the purpose of arranging meetings, posting notices, and in general carrying out educational work in his own town and those adjoining.

Mr. Endersbee, Federal cooperator, made an examination of the blister rust eradication work in the towns of Laconia and Piermont, finding 99.1% efficiency in the work of the first crew of 4 men along fences and roadsides, and 96.9% in the work of the latter crew of 3 men.

Vermont: Mr. E. J. Foster, working in the vicinity of Sudbury, reports that he has obtained about 40 cooperators who have promised to pay for eradication work on their land next spring. Mr. Holden has been spending about a month in Bellows Falls and Brattleboro working up and directing local cooperation. Many pine owners have been interviewed, their property preliminarily scouted to determine the amount of infection and prevalence of Ribes, and a report made to the owners with recommendations concerning eradication. Where Ribes were numerous recommendations for fall or spring eradication have been made with very encouraging results in the majority of cases. Particular attention has been given to the owners of large pine plantations, including Mr. Hildreth's plantation of 10,000

white pine; the 15,000 pine of Mr. French; the Bellows Falls Village Corporation; the E. B. Barrows' property at Brattleboro; the Sandford Bishop plantation of 40,000 at Springfield. The Holden and Martin plantation, containing 42,000 pines on 35 acres, with a strip 600 feet wide around the plantation, was thoroughly scouted making in all 130 acres covered at a cost of 3¢ per acre. No pine and very little Ribes infection was found.

Mr. Stratton has been temporarily transferred from blister rust work to Seed Collection, but will return to the former work in a short while.

Exhibits have been made at the Rutland County Fair and Horse Show and the Caledonia County Fair at St. Johnsbury.

A very interesting infection area was found at Cabot by Messrs. Filler and Riley, where the disease had spread from a single large gooseberry bush to the surrounding pines in a plantation about 8 years old. This area is being mapped at present.

Mr. Riley recently took a vacation to get married. The office extends congratulations and best wishes.

Massachusetts. Three field crews and one scout were at work until October 9, eradicating Ribes in this State; two crews and the scout in Petersham, and the third crew in Winchendon. In the latter locality, skunk currants still retained their foliage in excellent condition on September 11. On the latter date, skunk currants in Petersham has been defoliated for some time, but fortunately the crews had completed the examination of practically all the skunk currant territory in the town.

Mr. Gould's crew has recently completed some private eradication work in Topsfield, Newburyport and Carlisle.

Supervisor White attended the local fairs in Worcester County with an excellent blister rust exhibit and reports unusual interest on the part of the public attending the fairs.

Mr. T. E. Francis is engaged in educational work in the Berkshires, and is meeting with success in arranging for Ribes eradication during next season. About $1200 have been pledged to date. Many owners have promised to give additional labor when work is being done on their properties.

Messrs. Pickler and Hodgkins have completed their work of checking the results of the 1916 Ribes eradication at Lenox, and are now mapping an infection center at New Boston.

A recent poster 12" by 17", as given below, has recently been printed, warning people not to plant currants and gooseberries in the towns where Ribes eradication is being carried on:

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF AGRICULTURE
and the
UNITED STATES DEPARTMENT
OF AGRICULTURE CO-OPERATING

NOTICE

DO NOT PLANT CURRANTS OR GOOSEBERRIES

For the protection of the White Pine in this town against the White Pine Blister Rust, you are requested to refrain from planting currant or gooseberry bushes. Your cooperation in this matter is earnestly solicited.

DEPARTMENT OF AGRICULTURE

136 State House
Boston

A. W. GILBERT,
Commissioner.

Rhode Island: The five scouts who are working under Mr. Sheals will continue their work until October 30. Mr. Sheals writes: "We have this year covered 14,755 acres of new territory and checked 8,409 acres of land worked first in 1917, '18, or '19. From the large check, I can prove without doubt that Ribes are being eradicated in Rhode Island up to from 96 to 98 per cent, the first time over." A considerable part of the large exhibit put up by the State Board of Agriculture is devoted to blister rust. This exhibit will be used at four of the State Fairs.

Connecticut: Mr. Filley writes that the crew employed at North Colebrook completed the season's eradication work September 1. On account of the opening of schools and colleges it was impossible to hold the crew any longer. It is now planned to start the pine survey work.

New York: Mr. Brooks reports (September 17) that the high school boys' camp has just finished its work and the boys have returned to school. The two camps at Sugarbush and North Hudson will finish their work on September 30.

Prof. Prentice's work with the portable motion pictures was considered highly successful, and it is planned to have someone in the field with this outfit early in the season. Prof. Prentice has returned to Purdue University, where he is teaching.

Mr. Perry has been in charge of the blister rust exhibit at the Franklin County Fair at Malone.

Mr. Magee is assisting pine owners in St. Lawrence County in eradicating their Ribes. A report has been received, concerning this work, that 1250 bushes

were recently pulled on 100 acres belonging to the Hanoway Water Power Company at Potsdam. A checking crew is engaged at present in eradicating an area at Pottersville. This area is in the center of an important white pine section and should be the beginning of a large amount of eradication work to be done next year.

Supervisor Woodward has recently started a crew at work at Silver Bay on Lake George.

Mr. Philip M. Browning received the following letter in reply to a request for cooperation in protecting a small pine plantation:

"Dear Mr. Browning:

I just received your letter relative to my 'potential forest.' I'm glad you remembered it, and had a chance to look it over. As to the Gooseberries and Currants, I'll be glad to see the last of them, and hope that you will be able to clear them out this season. I'll leave the entire matter in your hands. Clear out as much as you think necessary for the welfare of this small portion of the nation's future timber supply, and when you are finished send me the bill for my share in the undertaking and I'll be only too glad to pay it.

(Signed) C. Albert Jacob, Jr."

This letter is typical of the attitude of the majority of owners toward their pines. When convinced of the necessity of eradicating Ribes, most pine owners will cooperate as heartily as Mr. Jacob.

Minnesota: All Ribes eradication work was discontinued on August 31, the foreman of each crew remaining to complete mapping the areas worked. Mr. Streinz has continued to carry on experiments with Ribes sprouting and seeding on the eradication area at Rush Lake.

The results of scouting in Minnesota show the blister rust to be present over a wider area than was infected last year. The number of infections have not been quite so numerous, but this may be accounted for by the fact that relatively little scouting was done this year in last year's infection area. The season of 1920 was very different from that of 1919 amount of rainfall. From June 1 to July 13, 1920 at St. Paul, there was a total of 9.10 inches compared with a normal of 5.85. From July 13 to August 31 a total of .97 of an inch, the normal being 5.42 for this period. Southern Minnesota has had less rainfall than the northern part of the State. No infections have been found this year in southern and western Minnesota, though scouting has been carried on in 200 towns and villages west of the Mississippi River. A second inspection in Southern Minnesota, confined largely to Ribes nigrum, has just been completed. Quoting from the Minnesota news letter for October, the situation is as follows:

"Ribes infection has been found approximately twenty-five miles further north and thirty-five further west than infection in the native pine area has ever been found before, and as far as

fifty miles from the nearest infection found last year.

"At Grand Rapids, Ribes infection was found on September 27th. The identical bushes were carefully inspected on July 24th. This instance bears out last season's experience that June and July inspection cannot be depended on, unless supplemented by an inspection later in the season. It is interesting to note that only 3 R. nigrum were infected, although there were two dozen nigrum in the same garden, indicating that infection here was probably of recent origin.

"The first infection in entirely new territory was found by Guy B. Fenley who located one cynosbati, lightly infected, on the east shore of Gull Lake in Cass County, T 135 R29, on September 15th. This was quickly followed by an infection found September 20th by Ben Kienholz in Itasca County, T 55 R 26, about eight miles west of Grand Rapids. This was followed on September 29th by discovery of 3 infected R. nigrum and 1 R. vulgare in the town of Deer River, T 145 R 25. This infection is fifty miles from the nearest infection found before this year."

Heavy infection on Ribes nigrum in two adjoining gardens in Tower, St. Louis County, was found by Messrs. Kienholz and Lund on October 6. On October 8, four R. nigrum, one R. vulgare, and one R. americanum were found infected at Knife River, Lake County.

Mr. Anderson has resigned as Agent in charge of blister rust work in the State, to accept a position in the State Forest Service.

The blister rust exhibit was prepared for the Minnesota State Fair, which used a booth with a 16-foot frontage in the State Forester's allottment. Messrs. Anderson and Deflon, who stayed with the exhibit from September 4 to 11, report much interest shown and many questions asked. The attendance this year at the fair was approximately 535,000.

Wisconsin: The crew at Keshena on the Menominee Indian Reservation finished their work the latter part of August. An inspection by Mr. Pierce on September 8 showed Ribes floridum and cynosbati sprouting from the crown, with R. floridum in a moist place also sprouting from exposed lateral roots.

The crews at Amery finished their work the latter part of August, one crew returning to work in the Interstate Park at St. Croix Falls. Here on August 28, on account of the eight-weeks' dry spell, practically all of the leaves were off the R. cynosbati bushes except in the swamps.

At Luck, on August 27, the R. cynosbati were found to have been defoliated, probably from dry weather as well as the rust. New leaves appeared at the ends of branches and these were heavily infected.

Dr. Martin inspected work at Amery with Mr. Pierce and found the crews were getting over 95% of the bushes.

An infection was found in a new locality, in Sawyer County; several pines and many wild Ribes being found diseased at Reserve, on the Lac Court Oreilles Indian Reservation.

An exhibit was made by the Wisconsin Department of Agriculture at the State Fair at Milwaukee, which included the White Pine Blister Rust. Smaller exhibits were planned for several county fairs in the infected area.

Michigan: The scouting which was carried on by Dr. Alban Stewart and Mr. Paul A. Young has been discontinued for the season, no infections being found on either pine or Ribes during the year.

Mr. Schaaf, State Forester, informed Dr. Stewart that up to two years ago he calculated that 53 per cent of the State planting on forest reserves had been white pine, and that this rate would probably be maintained. The U. S. Forest Service intends to plant only 10 per cent of their forest plantations in Michigan with white pine.

Mr. Charles E. Prince has resigned to work for the Federal Horticultural Board. Mr. Prince scouted in Virginia, Maryland and Delaware and found no blister rust infection. In New Jersey, he found infected Ribes nigrum at Braddock Station, not far from Camden, and near Red Bank.

Mr. Wendel N. Watkins, who scouted in Virginia last year, writes interestingly of conditions in the Southern Appalachians:

> "Perhaps some of my observations on a recent camping trip would be of interest to you, so I am making note of them here. I make reference to white pines and Ribes.
>
> "At and around Mountain Lake, Virginia, wild gooseberries are present in very large quantities, both old and young bushes. These Ribes, though found mostly in old open fields, may be seen right under the white pine. Many of the white pine in this district are of commercial size, in fact some are being cut now.
>
> "On Bald Knobb which is about one mile from Mt. Lake, and which is the highest peak in Virginia (?), we find wild gooseberries and sage brush only. The wind is constantly blowing here and all the rest of the surrounding country bows in humble grace to this noble mountain which surpasses all of its fellows by about five hundred feet. Thus unlimited exposure.
>
> "In the neighborhood of Marion, N. C., I also noted some mature white pine, and at Ridge Crest, N. C. there seems to be some planted white pine, but I did not see any Ribes around here."

Recent Blister Rust Literature

Canada:

Rankin, W. H. - "How White Pine Blister is being combatted. Protective measures adopted for exterminating pest. Need of arousing public in united action against disease which is creating havoc". - Canada Lumberman and Wood Worker - September 15, 1920 - p. 40-41.

The general blister rust situation is described; the disease being found at present only in the Eastern Provinces of Quebec and Ontario. A report of the Portland Meeting of April 23-24, 1919 is given, at which were present representatives of the Western States and provinces. The following recommendations for Canada are made by Dr. Rankin:

"Suggested Lines of Action

(1) The necessity of making a quarantine on the eastern border of Alberta against all pines and Ribes thoroughly effective. The experience of quarantine officers here as well as elsewhere indicates that many of our quarantine measures are merely sieves which hold back the larger shipments, but allow countless smaller shipments to trickle through in various ways.

(2) I would consider it advisable that those provinces which have not yet provided themselves with quarantine acts be encouraged and advised to do so at the earliest opportunity, so that they may be able to protect themselves not alone against foreign importations but against the introduction of diseases from sister provinces, and, as already pointed out, it is very necessary that enabling acts passed for this purpose should be accompanied by an adequate organization and an emergency fund, which need not be spent unless occasion arises.

(3) I would further urge the adoption of a policy of publicity. I would favor the publication of bulletins, circulars, and press articles which would reach at least the greatest proportion of the public-spirited and intelligent members of the various provinces, and thus create a body of public opinion which would be in sympathy with any action that the department might be compelled to take.

(4) In further reference to resolution No. 8, which endorses the measures of protection already taken by the Dominion, I would suggest that the western situation be given every attention possible, even at the expense of work in the east if necessary, since at the present time the centre of interest in this disease from the federal point of view lies in the Province of British Columbia and the adjoining Prairie Provinces. The work to be done involves besides a strict establishment of the quarantine already mentioned, as careful a survey of the western pine district as possible to see whether the disease has yet become established there. If it is, all future work may be dropped, and if it is not, then we may continue to hope that it can be kept from spreading from our eastern districts."

Minnesota:

Anderson & Oppel. - "Raising White Pine in Minnesota". Bul. 5 of Minnesota Forest Service - White Pine Blister Rust p. 27-32.

Anonymous - "Protection from the White Pine Blister Rust". The North Woods, Vol. VII. May and June 1920 - No. 15. p. 22-23.

Cheyney, E. C. - "Preliminary Investigation of Ribes as a Controlling Factor in the Spread of White Pine Blister Rust." - Science - N. S. 52: No. 1345. pp. 342-345. October 8, 1920. Prof. Cheyney advocates the use of a grub hoe to cut off the roots, as pulling the Ribes bushes appears to favor sprouting. He writes:

> "According to the figures obtained the eradication crews attained an average efficiency of almost 99 per cent. on old bushes and seedlings. If the sprouts can be eliminated the reduced leaf surface should certainly give a large measure of protection if not complete exemption from the disease."

White Pine:

Anonymous - "The Declining Supply of White Pine". Lumber and Veneer Consumer - June 30, 1920. - p. 15-16.

CONFIDENTIAL NEWS LETTER

Issued by

The Office of Blister Rust Control

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1921

BUREAU OF PLANT INDUSTRY

U.S. Department of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Plant Industry.

Blister Rust Control.

June 20, 1921.

NEWS FOR BLISTER RUST WORKERS

(Confidential Letter - not for Publication)

EASTERN STATES

Maine:

As a result of scouting carried on last winter diseased pine were found in 80 towns for the first time. About 75% of the infections had developed since 1917. Prof. J. M. Briscoe has issued Bulletin No. 131 on "Forest Planting in Maine", which discusses the planting of white pine from the blister rust standpoint. Control work was begun in Maine June 1st with Professor Briscoe and six scouts and mappers in the field. Mr. S. T. Dana, formerly of the U. S. Forest Service is now Land Agent and Forest Commissioner of Maine and has been appointed a Collaborator of this office.

New Hampshire:

Diseased pine have been found in 100 New Hampshire towns. During the past winter heavily infected areas were found at Deerfield and Alexandria. Recently Messrs. Ayers, Reynolds, Chamberlain, Beasley, Cook, Morse and Filler visited the Deerfield area and were greatly impressed by the amount of damage done to the large pine by the blister rust. There are many trees on this area with dead or dying tops and serious stem infections. Some of the large pine 50' high have practically every branch diseased. To date 31 towns have appropriated $4,300 for cooperative control work, an average of $139.00 per town. Twelve towns that were considering appropriating funds for this work have not yet reported to the State Forester's Office.

Mr. Newman now has 11 crews in the field working in the following towns:

Tamworth	Center Harbor	Keene
Bennington	Jaffrey	Surrey
Moultonboro	Newport	Swanzey
		Winchester

New Hampshire cont'd.

Two crews are working in the town of Keene. The eradication work in the town of Marlboro has been completed. An abundance of wild Ribes were found in the towns of Marlboro and Bennington. Twenty checks that have been made by the crews in New Hampshire this year show an efficiency of about 98%. Messrs. Corliss and Newman are supervising the crews engaged in Ribes eradication work. Four advance scouts are now working with the crews in New Hampshire.

Vermont

A pine survey was conducted during the winter and on May 28 there were 2 or 3 men remaining on this work. All control work in Vermont is done on the basis of the State furnishing the supervision (foreman) and the pine owners furnish their own labor or pay the wages of the crew laborers. Mr. Riley now has two crews in the field and enough private cooperative work lined up to keep his men busy throughout the entire season. A very interesting infection area has been found at Middlebury, Vt., where the young pine in a small valley extending about a mile in length, were found to be badly diseased.

Massachusetts:

Massachusetts has seven crews working under the direction of Messrs. Perry and White. One crew is located at Winchendon, 2 at Lenox, 1 at Athol, 1 at Hubbardston, and 2 at Stockbridge. The crew at Winchendon started eradication work May 9th and up to May 23rd had pulled 72,446 wild Ribes. Three towns in Massachusetts appropriated a total of $1200, while 32 property owners in Lenox and Stockbridge subscribed $2,356.00 for cooperative control work. In addition one property owner at Great Barrington subscribed $75.00.

Rhode Island

Mr. Sheals has six scouts employed in Rhode Island. They are conducting

Rhode Island cont'd.

the Ribes eradication work by the preliminary scout method. At present they are working in the town of West Greenwich. During the spring diseased pine were found for the first time in seven Rhode Island towns.

Connecticut:

During April Connecticut completed a pine survey of the State and now has maps showing the white pine stands together with an estimate of the contents of each stand. The pine was plotted directly on the U. S. Geological Survey maps and sample quarter-acre plots laid out in each stand.

Connecticut has one crew eradicating Ribes at Norfolk and Colebrook under the direction of Mr. K. K. Stimson. These men are also inspecting pine plantations in some of the nearby towns and are eradicating Ribes in the immediate vicinity of these areas.

New York:

Mr. A. F. Amadon is in charge of blister rust control work in New York. Seven crews are working at North Hudson, one at Bolton, one at Lewis, two at Franklin, one at Wilmington and one at Queensborough, a total of 13 crews.

Mr. A. B. Brooks is engaged in experimental control work with headquarters at Warrensburg.

Minnesota:

Mr. K. J. Braden is now in charge of blister rust control work under State Forester Cox, after an absence of over two years. Cooperative control work with private individuals has been started at Marine Mills and Copas, on the St. Croix River. Ribes eradication was completed at Taylors Falls May 19.

A motion picture film of the blister rust and white pine, purchased in January, has been shown 11 times to a total audience of 1500. Blister Rust News Letter No. 1 from Minnesota appeared May 24. This is the fourth year of this

Minnesota cont'd.

valuable little sheet.

Wisconsin:

During April Mr. Ninman completed the small pine eradication at the new outlying infection center on the Lac Court Oreilles Indian Reservation at Reserve, Sawyer County, and also at Luck. Many farmers cooperating with the State have already removed the Ribes on part of their land.

One eradication crew is already at work east of Amery, while a second crew will start on June 20.

Michigan & Kentucky:

Dr. Alban Stewart has commenced scouting in Kentucky and will soon begin work in Michigan. He will scout for the disease, make a rough survey of the State for white pines, and locate sections of the State where the growing of gooseberries and currants is conducted on a commercial scale.

WESTERN STATES

Mr. Chas. R. Stillinger, in charge of quarantine inspection work is now in Washington completing his report and will return to the Northwest the latter part of June.

Mr. C. H. Johnson is now in Minnesota locating sites for demonstration areas. He will return to Berkeley and scout in California and Nevada with Putnam during the summer.

Mr. S. N. Wyckoff has sent in to Washington a fine collection of Ribes, numbering 60 specimens and containing 43 native western species. The herbarium will be completed as soon as the remaining species can be collected.

Mr. Root will make a rapid survey of conditions along the eastern boundary line of Montana, Mr. Goodding along the eastern line of Colorado, and Mr. Garrett

along the eastern line of Wyoming, to determine the abundance of Ribes and native 5-needled pines along this line.

GENERAL ITEMS

Mr. S. B. Detwiler attended the meeting of the Western Plant Quarantine Board at Victoria, British Columbia, June 7 to 10th. He will also attend the Annual Meeting of the American Nurserymen's Association, at Chicago, June 22 to 24th.

Messrs. E. C. Filler, A. B. Brooks, G. B. Posey and W. E. Pickler were in Washington a few weeks for the winter conference during January and February.

Dr. W. E. Pickler has revised his "Field Characters of Eastern Currants and Gooseberries", which will be distributed as soon as copies can be prepared.

Mr. G. B. Posey will devote his time to a study of the damage caused to pine by the blister rust and effectiveness of Ribes eradication in control work. He will be assisted this summer by Messrs. Pickler, Richards and Corbett.

Mr. W. S. Moir resigned May 31 to accept a good position with the Laurentide Paper Company with headquarters at Grand Mere, Quebec, where he will be Forester in charge of Forest Management Plans.

The Washington Office has purchased a motion picture projector. Two additional sets of each of the 5 completed blister rust films have been purchased and these will be loaned by the Department of Agriculture to exhibitors. Two additional films on the blister rust are in process of preparation.

The Box and Panel Exhibits are being sent out to State cooperators as fast as they can be completed.

Department Circular No. 177 on "The Treatment of Ornamental White Pines Infected with the Blister Rust", by Messrs. Martin, Gravatt and Posey is now in

press and will soon be issued.

"Nothing is so valuable as facts. Facts are not a substitute for thought, but they are a basis upon which we can begin thinking." Are we getting all the facts concerning the blister rust that it is possible to get?

Mr. Detwiler has contributed this clipping for the special benefit of scouts, but it is suggestive to all in showing the Value of Confidence.

> "The great success of Babe Ruth in long-distance hitting today is partly because his confidence is so palpable and prodigious that it cannot fail to have its effect upon the pitcher. Babe thinks so hard and so openly that he is going to make a home run that the pitcher is inclined to agree with him. Then some fifty-four times in a season Babe does and the opinion becomes unanimous. Now and again some cocky pitcher faces Ruth entirely unconvinced by the confidence of the batter. If the pitcher is able to hold to his belief strongly enough not to attempt to make each curve cut a corner, he may go far. In this mood last season came Urban Shocker of the Browns, boldly and nonchalantly throwing slow balls across the heart of the plate, and Ruth struck out three times."

Practically all of the field and office men have had to assist in the quarantine inspection work this spring. Mr. Detwiler was in the field most of the shipping season checking up the inspection work at various points. A total of 173 quarantine violations have been reported this year. Most of the shipments are small and the following table shows the number of shipments consigned to each state in violation of the quarantine:

Number of Shipments in Violation of Quarantine

State	Pine	Ribes	Total
Arizona	0	1	1
California	2	23	25
Colorado	0	36	36
Idaho	0	2	2
Kansas	1	20	21
Minnesota	0	1	1
Montana	0	3	3
Nebraska	13	16	29
Nevada	0	2	2

State	Pine	Ribes	Total
North Dakota	2	6	8
New Mexico	0	2	2
New York	1	0	1
Oklahoma	0	7	7
Oregon	0	4	4
South Dakota	0	8	8
Texas	0	1	1
Utah	0	4	4
Washington	0	12	12
Washington, D. C.	0	1	1
Wyoming	0	5	5
Totals	19	154	173

Any suggestions for improving the quarantine inspection work will be welcomed. Write Mr. Stillinger at 1214 N. 19th Street, Boise, Idaho, or at the Washington Office.

BLISTER RUST NOTES FROM THE OFFICE OF FOREST PATHOLOGY.

Dr. H. H. York began his summer work for the Office on June 1st. Dr. Perley Spaulding and Dr. York have investigated the inoculations on pine made at North Conway during the previous seasons.

Dr. Spaulding is on a field trip and will go over the Block Island plots, the Wilmington area, and such other infection areas as seem advisable, checking up the present situation and planning future work according to the results of his observations.

Dr. Walter H. Snell, now regularly attached to the Department of Botany at Brown University, will begin his summer work in the Office on June 16th. Dr. Snell will make general field observations during the summer.

Mr. Glenn G. Hahn is carrying on the greenhouse inoculation experiments at Washington. The purpose of the continuation of this work is to determine more definitely the difference in resistance and susceptibility of different species of Ribes, to the end that differential hosts which may be used for separating

the eastern and western blister rusts may be definitely established. In connection with his experiments, Mr. Hahn will also work out a summary of the humidity conditions under which Ribes infection occurs. While these experiments are naturally confined to greenhouse conditions, experience of other rust investigators leads to the opinion that the results obtained will closely approximate results which would be obtained in the field.

Dr. R. H. Colley and Miss Minnie W. Taylor are finishing up a study of the morphology and parasitism of the western blister rust. This work also involves a comparison with the eastern blister rust, the effect of the two rusts on their pine hosts, and a comparative spore measurement study of the aeciospores.

Dr. George G. Hedgcock is continuing the greenhouse experiments on the inoculation and infection of pine by sporidia.

Dr. E. P. Meinecke of the San Francisco Office attended the meeting of the Western Plant Quarantine Board at Victoria, B. C., June 7 - 10.

Prof. Ellsworth Bethel of the Denver Office will continue his field observations in Colorado and adjacent states this summer.

Branches showing pycnial drops should be collected and sent in to Dr. Spaulding. The color of the pycnial drops is apparently different in the eastern and western forms. Definite study will be made during the summer to determine whether or not a real difference in color exists and inasmuch as the accuracy of the results will depend upon a wide collection of samples, any help which the field men can give will be greatly appreciated.

The results of the greenhouse inoculations made during the last season will soon be correlated and tabulated. The data will practically establish the incubation period on Ribes under greenhouse conditions for both the eastern and western Cronartiums.

A revision of Farmers' Bulletin 742, "The White Pine Blister Rust,"

is being prepared.

Dr. Spaulding's manuscript, "Investigations of the White Pine Blister Rust," which brings the information on the results of research on the white pine blister rust both here and abroad up to date, will soon appear as Department Bulletin 957.

A new edition of 30,000 copies of Prof. Collins' Farmers' Bulletin 1178, "Tree Surgery", has been issued. The rapid exhaustion of the first edition of this bulletin and the immediate issue of a second edition indicates the very wide interest which the public has in the prevention and control of decay and fungous disease in shade and ornamental trees.

RGP
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UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Plant Industry
Washington

Blister Rust Control

July 20, 1921.

NEWS FOR BLISTER RUST WORKERS

(Confidential Letter - Not for Publication)

EASTERN STATES

Maine

Four men are doing advance scout work and mapping at Alfred and Sanford. Local pine owners are interested and Professor Briscoe expects to secure a large amount of local cooperation. Considerable pine infection has been found during the scouting in Sanford. A box and panel exhibit has been received by Professor Briscoe for use on educational work.

New Hampshire

Eradication work for the year has been completed in the following towns: Bennington, Bristol, Center Harbor, Claremont, Croyden, Jaffrey, Langdon, Lempster, Swanzey, Winchester, Littleton, Marlboro, Moultonboro, Northwood, Newbury, Newport, Orford, Surry and Tamworth.

Crews are now working (July 12) in the following towns: Bow, Brookfield, Derry, Durham, Gilmanton Hanover, Hillsboro, Holderness, Hopkinton, Merrimac, Keene, and Windham. More eradication work was done in New Hampshire during the month of June than in any one month previous; 14 crews were employed and over 800,000 Ribes pulled.

It is planned to close up Ribes eradication work in cooperating towns about the third week of July and reduce the field force to eight or ten men. These men will be used to scout intensively for blister rust in certain towns and to determine the presence or absence of infected pines. As much educational work as it is possible to carry on will be done by motion pictures, exhibits, window displays, etc.

New areas of infection have been found by eradication crews in the towns of Newbury, Moultonboro, Gilmanton and Northwood. The season up to July 7 has been so dry that a relatively small percentage of both wild and cultivated bushes show infection.

Vermont

Eradication work has been completed in the following towns: Middlebury, (College and town), Orwell, Pownal, Springfield, Windsor, Woodstock.

There are two crews now working (July 12) in Proctor and one in Weathersfield. A large amount of local cooperation has been secured this season.

Massachusetts

The first report of the uredo stage was received on June 6. The infestion was found in the vicinity of Seekonk by Mr. Fred A. Neill of the State Nursery Inspection force. The telial stage was first reported by Mr. White in Lenox on July 13 on leaves of the wild red currant.

Field work in the town of Hubbardston was completed for this season on June 4, the crew and scouts making examinations of about 6400 acres in the town, destroying 86,677 Ribes at a cost of less than 11 cents per acre. This is the lowest cost per acre that has been attained in the work in Massachusetts since the adoption of systematic field methods, and results primarily from the use of a form of the advance scouting method of control work.

In Athol eradication has been carried on over 4,300 acres, 24,466 Ribes being destroyed at a cost of 25 cents per acre. Mr. Hodgkins found this spring the first pine infection definitely reported from Athol.

Two crews were engaged in control work in the Berkshires, under direction of Mr. White. Up to June 15, the Lenox crew destroyed 28,600 Ribes, while in Stockbridge 65,500 Ribes were removed.

On the Otter River State Forest at Winchendon, up to June 15, the crew pulled 114,400 wild Ribes of which 99 per cent were skunk currants. On May 27, Mr. Hodgkins reported a single infected pine and a few scattering infections are now (July 8) being found on skunk currants.

Summing it up, 319,643 Ribes bushes have already been destroyed in the five areas being worked.

Rhode Island

Five scouts are working at West Greenwich and one scout at Smithfield.

Connecticut

Mr. Hickock reported the arrival of the box and panel exhibit which is to be used for educational purposes. A crew of six men is engaged on Ribes eradication work in the town of Norfolk.

Mr. Austin F. Hawes has been appointed State Forester of Connecticut with offices at Hartford. Mr. Walter O. Filley continues as Forester of the Connecticut Agricultural Experiment Station at New Haven, in charge of forestry experiments and will continue in charge of blister rust control work.

New York

The pine surveys stopped about May 1. Sixteen men were employed on this work during the winter. The survey covered approximately 300,000 acres on the Lake Champlain watershed.

Eradication work was started about May 15. At present (July 9) there are 19 crews in the field in the following localities:

Glens Falls	1		
Bolton	1	Lewis	2
Silver Bay	1	Tupper Lake	4
Wilmington	2	North Hudson	8

A considerable portion of this area is worked under cooperative agreement with pine owners. The rest is State land in the Forest Preserve. A badly infected area has recently been located by Mr. Ben Nichols in Wilmington Valley; a plot 100 feet square showing over 90% of the pines and 85% of the Ribes infected. What, at first, looked to be a poor year for local cooperation has turned out to be a very successful one, there being as much local cooperation already obtained as can be handled this season.

Doctors Spaulding, Pennington and Regan have recently been looking over areas in New York for demonstration purposes.

Mr. Detwiler is conferring with field men at North Hudson in regard to the experimental control work which Mr. Brooks is conducting at that point.

Michigan

Dr. Alban Stewart is scouting for the blister rust in Michigan. No signs of the disease, however, have been found this year. He found very little white pine in the section along Lake Michigan where gooseberries and currants are grown commercially. The remainder of the season will probably be spent in southeastern Michigan where the only blister rust infections have been located in the past.

Wisconsin

Conditions affecting the spread of blister rust appear quite favorable. The large pine infection centers have been removed, and as yet but few Ribes infections have been found this year in Polk or adjacent counties. This is probably due to the six weeks dry spell.

The advance scout, W. C. Thompson, Jr., is working with Crews 1 and 2. The land in the control areas is largely pasture with open fields adjoining, and the advance scout has been able to "throw out" considerable areas which do not need crew work.

Two Ribes eradication crews have been at work in Polk County. Crew No. 1 near Amery has been removing about 2500 Ribes per day. They finished their work about July 15, covering a total area of 2,535 acres. Crew No. 2 is near Luck. This work is practically complete on a total area of 1,370 acres.

The first Ribes infection was found on June 22 by Mr. Thompson. Dr. R. H. Denniston of the University of Wisconsin, with an assistant, has begun scouting for new infections in northern Wisconsin, north and east of the generally infected region.

Mr. H. J. Ninman reports that the new tool known as the "Farm Pick" used for eradicating bushes has proved of much importance. The pick is of aluminum bronze. Trial samples can be secured at cost from Mr. Ninman at Amery, Wis. This pick is an exceptionally good one and should be tried out by each state.

Mr. Detwiler visited the Wisconsin crews on July 2, and made an inspection of infected region to locate a demonstration control area.

Minnesota

Mr. K. J. Braden reports that Ribes eradication up to July 1 was carried on on a cooperative basis, owners either paying half the cost or expending labor equal to half the cost. Ribes eradication has been carried on over 589 acres; 39,705 Ribes bushes being removed at an average cost of 55.7 cents per acre. Summer resort owners having white pine have been glad to cooperate in their protection. The city of Duluth, which has considerable white pine in its parks, is assisting control work by supplying labor.

Mr. Detwiler visited Minnesota lately to locate a demonstration control area in the infected region.

The city of Saint Paul is planning a municipal forest near the Dale Street reservoir. They have planted 25,000 white pines and a similar number of red pines at this site under direction of Prof. J. H. Allison of the University of Minnesota.

WESTERN STATES

Mr. Stillinger, with headquarters at 1214 North Nineteenth Street, Boise, Idaho, is scouting in the Northwest. He attended the meeting of the Pacific Coast Nurserymen's Association on July 12 and had a place on their program. A blister rust exhibit of specimens, photos and posters was shown.

Mr. S. N. Wyckoff is at Berkeley, while C. H. Johnson and H. N. Putnam are scouting in eastern California. Mr. A. O. Garrett is making observations on pine and Ribes in Wyoming, working west along the Union Pacific. He found limber pine present on Harney Peak, 1¼ miles from the summit, in the Black Hills of South Dakota. He also found limber pine at Pine Bluffs in southeastern Wyoming near the Nebraska line.

Mr. L. N. Goodding has found that limber pine is practically continuous from Pawnee Buttes in northeastern Colorado (8 miles from Grover) north to Pine Bluffs, Wyo. He has also found these five-needled pines (Pinus flexilis) in Kimball County, Nebraska, east of Pine Bluffs, Wyo., extending over an area of several square miles. Mr. Goodding reports that the pine growth is practically a pure stand of P. flexilis, in many places quite dense. The stand of old timber was all removed by early settlers, but many at present are trying to preserve the growing stand.

As far as is known, this is the first time that any native five-needled pines have been reported from Nebraska.

EDUCATIONAL NOTES

Mr. R. B. Corbett reports seeing blister rust posters in various depots in small villages in New York State. He says somebody must have been doing some good educational work in the Empire State.

Mr. R. G. Pierce reports the use of blister rust posters on large white pines in New Hampshire. These are bound to attract attention if sufficient of them are used.

Mr. J. L. Richards has forwarded the Washington Office a good collection of diseased and clean specimens of native Ribes from New Hampshire, to be used for exhibition purposes.

The Office always welcomes additional specimens of the disease on pine and Ribes to be used in exhibits.

QUARANTINE INSPECTION

The men who were examining shipments of nursery stock during the spring will be interested to know something of the status of the work. In the last issue of the News Letter, the total number of violations, by states, was reported. The number of plants shipped in violation of the quarantine during the season of 1921 is as follows:

State	Pines	Ribes
Arizona		1
California	3	54
Colorado		1211
Idaho		5
Kansas	2	92
Minnesota		24
Montana		14
Nebraska	263	75
Nevada		38
North Dakota	18	37
New Mexico		29
New York	9	
Oklahoma		42
Oregon		5
South Dakota		76
Texas		2
Utah		21
Wyoming		12
Washington		30
D. C.		10
Total	295	1778

71 shipments were made by parcel post, 64 by express, 7 by freight, and in 32 cases the carrier was not known. Nurserymen generally have tried to comply with federal regulations.

74 per cent of the 1921 violations have been either destroyed or returned to the consignor and reports of favorable action on the other cases are gradually being received. Many consignees who were asked to destroy their plants have shown a favorable attitude in the matter. Those in western states were especially desirous of cooperating in the protection of the western forests.

GENERAL

Mr. Detwiler visited the Coeur d'Alene National Forest in Idaho last month and obtained information on the stumpage price of western white pine. The Coeur d'Alene National Forest had just made a sale of 66-year-old western white pine timber, involving 250,000 feet at $6.00 per M feet.

Dr. W. S. Regan, who conducted spraying experiments for the Office for the past three years, is working this summer in the Bitter Root Valley in Montana under direction of the State Entomologist.

RGP:MT.
(7/21/21)

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Plant Industry
Washington

Blister Rust Control. August 20, 1921.

NEWS FOR BLISTER RUST WORKERS

(Confidential Letter - not for Publication)

EASTERN STATES

Mr. E. C. Filler, who is in charge of the blister rust work in the East, has gone to Minnesota and Wisconsin to establish demonstration areas. During his absence Mr. W. O. Frost will take charge of the New England Office.

The new address of the New England Office is Room 402, Appraiser's Stores Building, 408 Atlantic Avenue, Boston, Mass.

MAINE:

Scouting in the white pine area in Maine has brought to light a number of new pine infections. Mr. I. McKechnie has reported infection on Speckled Mountain in the town of Peru, about a mile and a half from Dickvale. He also reports infection at Bryant Pond. Blister rust on native pine and also in the white pine plantations of H. D. Granville near Parsonsfield has been reported by Mr. L. W. Hodgkins. The disease is generally scattered in this section. Mr. Granville will eradicate the Ribes on his property. Mr. Hodgkins also visited the Shaker Village area and found that the pine infections extend over a large area - at least 3/4 of a mile in depth and nearly a mile long. Infections date from 1911 to 1920 in origin. Quite a good many dead trees were seen.

Two crews have started eradication work in Sanford. Practically all private cooperative work that can be done this season has been signed up.

At the State Field Meeting of Maine Scientists, Naturalists and Nature Lovers, held in Knox County on August 23 to 26 inclusive, under the auspices of the Knox Academy of Arts and Sciences, Prof. John M. Briscoe delivered a lecture on the white pine blister rust. It was illustrated with lantern slides and motion pictures.

Maine cont'd.

Mr. Endersbee recently completed a check on 4 plots representing 10% of the infection area studied at Kittery Point in 1918. In the latest check Mr. Endersbee examined 612 pines which were examined in 1918. Of this number 159 were alive but infected with the blister rust, and 204 pines were dead. Close examination failed to reveal a single infection which had come in later than 1916. In addition to the 612 pines which were on the area in 1918, there were found 146 young pines which developed since 1916 and which are entirely free from infection. This is first-class proof of the effectiveness of Ribes eradication in checking the blister rust. Similar reports have been received from Dr. York who has examined the area at North Conway, N. H., worked in 1917, and from Dr. Pennington for areas in the vicinity of Lewis, N. Y., worked in the same year.

NEW HAMPSHIRE:

On July 29 Dr. Metcalf, Dr. York and Mr. Detwiler examined the conditions on the extensive infection area at South Deerfield. Dr. Metcalf states that South Deerfield is one of the best places that he knows of to see heavy infection of blister rust over a fairly large area, on large trees. On the same date Mr. L. E. Newman and several of the leading New Hampshire lumbermen visited the area and were greatly impressed with the damage wrought by blister rust to large pines.

Mr. L. W. Hodgkins is conducting a systematic scouting trip into northern New Hampshire to obtain more accurate data regarding the extent of Ribes and pine infection. He is particularly searching for areas of pine infection due to isolated wild Ribes bushes. We shall be very glad to learn from any of the field workers the location of isolated wild Ribes, or small groups of Ribes surrounded by pine where no other Ribes are present within at least 300 yards. This data is needed to complete the studies of damage and the reach of the disease which are now being made by Mr. Posey and his assistants.

New Hampshire cont'd.

In a recent letter to the Office, Mr. Hodgkins stated that one can walk for a half day in the vicinity of Littleton, N. H. without being out of sight of pine infection and that where Ribes have not been removed, the outlook for pine under 20 years of age is very grave.

On August 31 Mr. Detwiler addressed the annual meeting of the Society for Protection of New Hampshire Forests at North Woodstock, N. H. On September 2 those in attendance will take an excursion in the field in the vicinity of Littleton to see at first-hand what the blister rust is doing. In the afternoon, the inspection will be conducted at North Conway where eradication of Ribes in 1917 has checked the disease.

Mr. John H. Foster, State Forester, is now a Collaborator of the U. S. Bureau of Plant Industry.

VERMONT:

Eradication work has been completed upon the Vermont Marble Company's area of about 1000 acres at Proctor, Vermont, and upon twenty-four other privately owned areas varying in acreage from 24 to 500 acres. Since the completion of the Proctor work, Mr. Frank Rose has reduced his eradication force to one crew which is now employed at the West Rutland State Forest, and it is expected that this work will take about three weeks.

Some scouting and possibly crew eradication is to be done on the West River State Forest at Townshend. Messrs. Holden and Foster will have charge of the work.

It is planned to place Blister Rust exhibits at the following Vermont Fairs: Morrisville, Sheldon, Middlebury, Barton, Manchester, St. Johnsbury, Woodstock, Tunbridge and at the Vermont State Fair at White River Junction. The fairs start August 23 and will last up to October 6.

Vermont cont'd.

Mr. C. D. Cutting, who has had the supervision of the Brattleboro district this summar is leaving blister rust work the latter part of August to complete his Forestry schooling at Oregon Agricultural College, Corvallis, Oregon.

Mr. Frank Rose, Supervisor of the Rutland District, has left for a two weeks vacation to be spent at his home in Troy, N. Y.

Congratulations are in order to Mr. S. V. Holden, who was recently married and is now living at Brattleboro, Vermont, where he is doing scouting work. Mr. Holden is District Forester for the St. Albans District, whose entire time this summer has been spent on blister rust work.

Mr. J. E. Riley, Jr. has a new assistant in supervising blister rust work in Vermont. Hername is Miss ----- Riley, born in August, 1921. We wish Miss Riley many happy returns of the day.

Mr. W. G. Hastings, State Forester, has been appointed a Collaborator of the U. S. Bureau of Plant Industry.

MASSACHUSETTS:

Professor Lawrence R. Grose of the faculty of the Massachusetts Agricultural College recently spent a day in Lenox and Lee in company with Messrs. Perry and White, obtaining information relative to blister rust and the conduct of control measures. Professor Grose is in charge of the forestry work at the college and in addition to giving instruction in general forestry, is responsible for the management of the Mt. Tobey Demonstration Forest in the town of Sunderland. This tract, owned by the college, serves as a field laboratory for the study of problems in silviculture, forest mensuration, and management.

Control work is still in progress in Berkshire County, where a field force of twenty men is engaged in Ribes eradication in the towns of Lenox, Lee and Stockbridge.

Massachusetts cont'd.

In an endeavor to determine the effectiveness of root eradication of skunk currants, a special series of checks was made in July, on work done last year on the Otter River State Forest in Winchendon. These checks were taken in various sections of 1330 acres covered last year and in situations where the crew had been up against it. From the checks made, it appears that an average efficiency of more than 98% was attained. These results are indicative of the fact that good work can be done on skunk currants.

CONNECTICUT:

Litchfield County, Connecticut - The pine scouting which was carried out during the winter of 1920-1921 revealed the fact that infection on pine was much more widespread than had previously been supposed. Not only were many new points of infection found within the former limits of pine infection but many entirely new infection centers were located outside of this area.

On May 1st a crew of six men put in a camp in Norfolk and have continued working from this camp to date. These men have checked over areas eradicated in previous years and have worked out into as much new territory as time has permitted.

The worst new lot of pine infection was located in Cornwall last winter. Pine infections in plantations have been found here since 1916 but up to 1920-21 none have been found on native pine. Since July 15 two men have been detailed to this section to get as much data as possible preparatory to eradication work in Cornwall and vicinity next season. So far these men have found that pine infection is very heavy and very generally distributed. It may be interesting to note here that Messrs. Filley and Wilfong found infections at one point which dated back to 1904. So far as is known no imported pine stock was planted in Cornwall until 1907 or 1908.

Connecticut cont'd.

During the latter part of the month of April five men were sent through some of the plantations throughout the state which were known to have been established from foreign grown stock. (Litchfield County Plantations were not included.) Most of these plantations have been inspected for a number of years and in most of them some eradication of Ribes has been done. Numerous infections were found in only one of these plantations, Mr. Whittemore's in Middlebury, but here infection took place in 1915 or before.

Mr. W. O. Filley, Forester, Connecticut Agricultural Experiment Station, has been made a Collaborator of the Bureau of Plant Industry.

Mr. H. W. Hicock, Assistant Forester, Connecticut Agricultural Experiment Station, has been appointed agent of the Bureau of Plant Industry and is in charge of the field work in Connecticut.

NEW YORK:

A conference was held at North Hudson, New York, early in August, at which Commissioner E. J. Staley of the New York Conservation Commission, State Forester Pettis, Dr. Metcalf, Mr. Detwiler, Mr. Amadon and others were present. All were impressed with the high percentage of infections in the young pines and with the rapidity with which the blister rust has spread throughout this section of the Adirondacks in the past few years, especially in 1919. Investigations showed visible infection running as high as 70% of the young pines. Wild Ribes are very numerous (100 to 400 bushes per acre). Measurements on sample plots show that most of the pine lands in this region have 500 to 1000 feet of leaf-bearing stems of Ribes per acre, and in some cases it exceeds 5000 feet of leaf-bearing stem. The close relation between amount of Ribes leafage and the amount of pine infection is well shown at North Hudson.

For the purpose of investigating pine infections and collecting specimens for educational work Mr. Roy G. Pierce made a two weeks' trip to New York State

during the first part of August. He visited the infection centers at Wilmington, Warrensburg, Chestertown and North Hudson. At Wilmington in a 1/4-acre plot containing 123 white pine trees, 111 or 90.2% were infected. Of the 83 gooseberry bushes on this plot 71 were infected. This is one of the heaviest infections in this locality. Mr. Ben Nicholls supplied this data for Wilmington.

Mr. Pierce made arrangements with Dr. W. A. Murrill of the New York Botanical Garden for installing a blister rust exhibit at the Garden.

MICHIGAN:

Mr. J. G. Prestage of the Allegan Nursery, Allegan, Michigan, was recently fined $25 for violation of the quarantine in the shipment of four white pines to Kansas in May, 1920. The trees were labeled "Yellow Pine" and "Jack Pine."

Dr. Alban Stewart has been scouting along the eastern side of Michigan, bordering Ontario, looking for possible infections which may have spread from Canada. No trace of the blister rust has been found in Michigan since 1919.

WISCONSIN:

The two crews employed on Ribes eradication during 1921 have now completed five areas totaling 9470 acres, including the land thrown out by the advance scout. It was necessary for the crew to cover somewhat less than half of this territory. Only one crew is working at the present time and they expect to cover three more small areas totaling between seven hundred and eight hundred acres in extent. The Ribes eradication territory covered thus far has been confined to Polk County in areas in which infection has already been found. Infected trees and bushes this season are very scarce and the spread from the pine has been unusually limited in extent.

Arrangements have been made with the Lac Court Oreilles Indian Reservation in Sawyer County for cooperative Ribes eradication of three or four hundred acres. The blister rust service will supply a foreman and the crew will be made up of Indians from the Reservation.

Arrangements have also been made with the park board of Chippewa Falls for Ribes eradication in Irvine Park, in which a few bushes were discovered infected last season. Irvine Park has a remarkably fine stand of white pine of which the city is very proud.

Dr. R. H. Denniston and T. F. Morson have been traveling throughout the northern part of the state since July 15 searching for infected Ribes and are now in Door County. No success in locating blister rust is reported.

Mr. E. C. Filler of the Federal Office of Blister Rust Control work, was with Messrs. H. J. Ninman and William C. Thompson, Jr., the first week of August going over possible demonstration areas. The most likely locations for such an area are south of Menomonie, in Dunn County, or near Prairie Farm, in Barron Count

MINNESOTA:

Mr. J. D. Winter is planning to place a blister rust exhibit at the State Fair. This is an annual event and many thousands of people from the Lake States see the exhibit, which is in connection with the Forestry Department.

NEBRASKA, NORTH & SOUTH DAKOTA:

An extended scouting tour along the Missouri and Heart Rivers near Mandan, and in the vicinity of Bismarck, North Dakota, at Pierre, South Dakota, and along Long Pine Creek in Brown County, Nebraska, has been made by Mr. D. V. Baxter, in which he gathered considerable data concerning the general flora and particular Ribes species in that section of the country. Streams, as well as gumbo hills and sand flats were scouted.

WESTERN STATES

A western circuit of blister rust box and panel exhibits is planned for th State and County fairs of the West this season. Exhibits will be shown in 4 Fore Service districts.

A blister rust exhibit was set up in the Plant Pathology Laboratory at the

Western States cont'd.

University of California, Berkeley, for the meeting of the Phytopathological Society, which met in connection with The American Association for the Advancement of Science on August 4 to 6. The California Section of the Society of American Foresters held one meeting in conjunction with the Ecological Society, and the exhibit was placed where the pathologists and foresters could all see it.

The following letter expressing the attitude of some of the California lumbermen towards blister rust work is encouraging:

"CALIFORNIA WHITE & SUGAR PINE MANUFACTURERS ASSOCIATION.

San Francisco, California,
July 26, 1921.

Mr. Stephen N. Wyckoff,
Asst. Pathologist, Bureau of Plant Industry,
Room 3, Hilgard Hall, University of California,
Berkeley, California.

Dear Sir:

Your letter of July 15 to Mr. Templeman of the California Pine Box Distributors has been referred to me for reply.

This Association as a body is very much interested in the matter of pine blister rust control. Most of our people are out of town at present, but it is our thought that later on we should arrange a mass meeting of lumbermen to consider this subject, either under the auspices of this Association or the California Forestry Committee, of which Professor Donald Bruce of the University is Chairman. When such meeting is called we shall be very glad indeed to have you present all data available with regard to this matter.

Very truly yours,

(s) C. Stowell Smith,

Secretary-Manager."

Mr. Root is working in Montana, searching for the eastern border of the white pine as well as inspecting some planted pines.

During the latter part of this month Mr. Perkins of the U. S. Department of Agriculture Motion Picture Laboratory will stop at Potlatch, Idaho, to make some films of the saw mill operations there. This is one of the largest white pine mills in the country. When running full force they cut about 800 thousand

board feet of lumber each 24-hour period. Mr. Stillinger and Mr. Perkins will also get back into the woods to get some pictures of mature pine and reproduction. Later Mr. Perkins will stop at one of the California National Parks to film some sugar pine.

Mr. Stillinger will spend most of the coming month scouting for blister rust in southern Idaho. His permanent address is 617 Elm Street, Moscow, Idaho, instead of the Boise address previously given.

WASHINGTON OFFICE

Representatives from 9 cooperating states attended a hearing before the Secretary of Agriculture on August 18, for the purpose of urging a federal appropriation to meet the state appropriations dollar for dollar in cooperative blister rust control. The following delegates were present: Mr. S. T. Dana, Forest Commissioner of Maine; J. H. Foster, State Forester of New Hampshire; Mr. J. E. Riley, Jr., in charge of blister rust work in Vermont; Mr. H. A. Reynolds, Secretary of the American Plant Pest Committee; Mr. R. H. Allen, Director of the Bureau of Plant Industry, Massachusetts Board of Agriculture; Mr. R. A. Sheals, Assistant State Entomologist of Rhode Island; Mr. W. O. Filley, Forester; Connecticut Agricultural Experiment Station; Mr. A. F. Amadon, in charge of blister rust work in New York; Dr. S. B. Fracker, State Entomologist of Wisconsin; Mr. K. J. Braden of Minnesota. Dr. W. A. Taylor, Chief of the Bureau of Plant Industry, Dr. Haven Metcalf of the Office of Forest Pathology, Mr. S. B. Detwiler and Dr. J. F. Martin were also in attendance.

Boston Conference

A preliminary conference of state blister rust cooperators was held at Boston, Massachusetts on July 27. At this conference resolutions were adopted expressing the cooperators' appreciation of the increased seriousness of the white pine blister rust as a menace to the production of white pine in the United States, and urging the cooperation of foresters, botanists, timber land-owners

and the public generally in the work of fighting this disease. The conference agreed to urge increased state appropriations for white pine blister rust control and re-establishment of dollar for dollar cooperation by the federal government to meet the present emergency.

In order to conduct further experimental work in cutting out blister rust cankers from ornamental white pines, Dr. J. F. Martin left Washington August 19 on a field trip covering Pennsylvania, New York and New England.

Mr. C. E. Randall came East from California in the latter part of July to join the office force at Washington, D. C. He will aid in educational work.

Miss Mary Brennan has returned to Washington from the Cambridge Office.

Miss Julia Hallameck recently returned from a month's vacation in Minnesota.

Miss Mamie McWold is recovering from a tonsillar operation.

GENERAL

Along with a collection of Ribes specimens which he made during his recent trip to New York State, Mr. Pierce brought back a number of specimens of other plants which closely resemble Ribes, but are not. Mr. Pierce refuses to admit that he collected these specimens unknowingly although we would like to spring this as a good joke on him. Among these specimens were a Miterwort (Millela diphylla), a low herb which resembles R. cynosbati, the purple flowering raspberry (Rubus odoratum); mountain maple; and red raspberry. The latter two have leaves much resembling those of Ribes triste. At any rate the foremen of Ribes pulling crews can watch for these plants which might easily be mistaken for currants or gooseberries.

* * * * *

They say that quite a bit of red likker comes across the Michigan border from Canada these days. Dr. Alban Stewart is patrolling the border, so to speak, to find any Blister Rust that might get in. -- Wonder if he confines his attention to blister rust.

Mr. Stillinger has made plans for fall inspection of nursery stock as follows: This plan has been approved by Mr. Detwiler and it is expected that the inspectors will work through the month of October at the stations designated. The exact time inspection starts will be announced as soon as it is learned when the fall movement of nursery stock will begin this year. Owing to the early maturity of plant growth, it is probable that the shipping season will begin somewhat earlier than usual.

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At the rapid rate the pines are becoming infected with blister rust, we might be justified in suggesting that the yellow dust mentioned in the following news clipping might be comprised of aeciospores:

"At far-off Dawson a rain of yellow dust has fallen on the ground. Chemists are analyzing it. It may be sulphur that clouds and wind picked up from some volcano in the unexplored North. It may be pollen from distant pine trees carried to Dawson. It isn't gold, which is the important thing. If from interstellar space a rain of gold dust should begin settling on the earth how industriously brooms and shovels would be used."

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A scout in Maine, coming out of the woods, came upon an old woodsman, carrying an axe and saw over his shoulder, and rather startled him by his sudden and unexpected appearance. The woodsman asked him rather abruptly what he was doing in there, to which he replied that he was looking for the Pine Blister Rust. "Oh yes," replied the old woodsman, "I seen one of them critters cross the road just a little way below here. He leaves a trail of pitch behind him, don't he?" (The question seems to be: Which one was really kidding the other?)

Blister Rust Notes from the Office of Forest Pathology.

Department Bulletin 957, by Dr. Spaulding, entitled "Investigations of the White Pine Blister Rust" is in page proof. This bulletin summarizes the researches on this subject since Bureau of Plant Industry Bulletin 206 was issued.

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Very limited response has been received to Dr. Metcalf's circular letter, sent out in May, requesting "pycnospore prints" and supplying material for taking the prints. It is vitally important that as many of these prints be sent in as can possibly be obtained.

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Pinus aristata is a new host of the blister rust. It is imported from England, according to Dr. Spaulding.

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Dr. R. H. Colley has taken charge of the branch office of Forest Pathology at Madison, Wisconsin. His address there is Old Soils Building, University.

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Plant Industry
Washington

Blister Rust Control. September 20, 1921.

NEWS FOR BLISTER RUST WORKERS

(Confidential Letter - not for Publication)

EASTERN STATES

MAINE:

Field work for the present season is about completed and has been very successful. Prof. Briscoe has resumed his duties at the University of Maine. Mr. Frost assumed charge of the blister rust work in Maine September 16th under the direction of Mr. S. T. Dana, Forest Commissioner. His headquarters will be Augusta, Maine, and during the winter much of his attention will be given to blister rust educational work among pine owners.

A blister rust poster in the postoffice at Kennibunk Beach, Maine has caused a citizen of Connecticut to write the Washington Office in regard to controlling the disease and the protection of his pines in Connecticut.

NEW HAMPSHIRE:

Cooperative work with towns was completed in New Hampshire about the last of July. Control work was continued and new areas started in 36 towns. The total area covered for the above number of towns was 131,798 acres. The season of 1921 terminated the work in five towns, as the areas worked this year completed the land needing eradication. To date 17 towns have been entirely covered.

Private cooperation has been secured in 8 towns, in four of which no blister rust work has hitherto been carried on. In these areas the owner pays for the work with the exception of the supervision which is supplied by the State.

New Hampshire cont'd.

Scouting for blister rust on pines is being conducted by Messrs. White, Moir, Fitzpatrick, Scott and Dickey. Thus far, they have turned up infection in four new towns. During the latter part of August and early September, Messrs. Detwiler, Hodgkins and Newman located infection on pine in four additional towns. These new infection areas added to those previously found shows that diseased pine are present in 115 towns in New Hampshire.

What Others Think of Blister Rust:

"This disease is far more serious than I had any idea it possibly could be!" "As a matter of fact you men engaged in blister rust work have been too conservative in what you have said as to the seriousness of blister rust!" "I would not purchase myself, nor would I advocate to anyone else the buying of a lot of young growing white pine to hold for an investment, unless the currant and gooseberry bushes were first removed!" These opinions were expressed by several prominent New Hampshire lumbermen and pine owners after viewing the damage wrought by blister rust in the Littleton and Deerfield areas. They frankly admitted that previous to their inspection of these areas they were sceptical as to the seriousness of blister rust. They are now convinced of the need for immediate eradication of currant and gooseberry bushes to save stands of young white pine growth from destruction.

CONNECTICUT:

Owing to the fact that pine infection of rather serious aspect has been found in Cornwall, Connecticut, work in Norfolk will probably be discontinued for next season at least. The eradication crew has therefore been attempting to clean up the worst areas left around Norfolk and leave that area in as good a condition as possible. Except where it has been necessary, very little close crew work has been done. Instead the preliminary scout method has been used.

After September 17th two men will be detailed to scout the town of Canaan and report on the amount of pine infection found. Another man will be sent along

Conn. cont'd.

the Rhode Island boundary to scout for blister rust. Near the center of the town of Cornwall, Mr. Wilfong found an area 2 miles wide and 5 miles long in which pine infection was very heavy, in some cases dating back to 1910, and in one instance apparently back to 1904.

MASSACHUSETTS:

Ribes eradication work was discontinued for the season on September 17, all available funds having been expended.

Messrs. Perry and White are attending all agricultural fairs throughout the State with a Blister Rust exhibit including the panel box recently furnished by the Washington Office. At the Greenfield Fair, (live wire fair) a special outdoor display featuring wild Ribes, was arranged in cooperation with the conservation committee of the Greenfield chapter of the D. A. R. Another special exhibit will be shown at the Massachusetts Building at the Eastern States Exposition at Springfield from September 18-24. The schedule will be completed on October 6 at the "Three County Fair" at Northampton.

The Massachusetts Department of Conservation in cooperation with the Director of the Harvard Forest, has just issued a revision of the booklet entitled "Forest Mensuration of the White Pine" originally prepared by Mr. H. O. Cook in 1908. This new bulletin contains, in addition to the material in the original booklet, information collected by the Department of Forestry at Harvard University in its research work and should be of interest to pine owners and to men engaged in pine survey work in the White Pine region of New England.

NEW YORK:

Mr. Amadon on September 19 sent in the following note:

"Work has been curtailed during the last ten days. By September 24, all the eradication crews will have stopped. Check crews have been put on for the last 2 weeks.

New York Cont'd.

On September 20 the Association of State Foresters held their annual meeting at Albany. This included a two-day trip through Warren and Essex Counties to make a field inspection of the blister rust situation. About twenty-five state foresters are expected, one coming from California. One of the special objects of the meeting was to thoroughly consider the blister rust problem. Mr. Detwiler attended this meeting.

Field conditions are those of late October, due to extra dry weather this summer, and already much of the foliage has fallen. In a short while the five New York supervisors will be scouting outlying districts of the whole state for diseased pine.

MICHIGAN:

Dr. Stewart completed this season's scouting for the blister rust on September 5 without being able to discover any signs of the disease in the State.

In the region along Lake Michigan many counties grow gooseberries and currants commercially. An inspection in a number of these localities showed that in most cases white pine was not present near commercial plantings. A special trip was made through the eastern counties bordering Ontario in order to locate cultivated black currants. These however were very few. Wild Ribes were found to be abundant in the small woodlots and in swamps. Near Port Huron there is considerable white pine, but northward in the "Thumb" district there is very little.

The negative results of the scouting indicates the absence of the disease from the state but there is constant danger of its spreading into Michigan from southern Ontario sooner or later.

Dr. Stewart suggests that we strive "to determine accurately the regions of the State in which white pine will grow but in which wild Ribes are rare or entirely absent."

WISCONSIN:

Ribes eradication was continued during late August at Boyceville and Downing

Wisconsin cont'd.

in Dunn County and at Irvine Park in Chippewa Falls, while a small woodlot was worked near Cameron. Scarcely two-thirds of the area over which cooperative work was planned for the season has been completed, most of the unfinished work being in Burnett County.

From August 25 on, Messrs. Ninman, Thompson and Hill have been scouting for the disease in Polk, Dunn and Barron Counties. They have found important infections near Prairie Farm, while a number of single bush infections were located in the northwestern part of Barron County.

On September 9 and 10, Dr. Fracker, Dr. L. R. Jones, State Forester Harrington and Mr. Ninman made a tour through the large areas where Ribes have been eradicated and through some other pine areas. Near the Eau Galle River, about 2 miles south of the village of Eau Galle in northern Dunn County, a new infection on 6 Ribes bushes was found by Dr. Fracker at the edge of a very good stand of white pine averaging about 35 years of age.

On September 14 Mr. Ninman in company with Mr. Chambers, State Nursery Inspector, discovered an extensive Ribes infection adjacent to the North of Amery eradication area.

WESTERN STATES

Chas. Johnson writes on September 6, "that Putnam and I are working in Sugar Pine and Pinon (association) areas." Up to date they had found the pinyon rust (Cronartium occidentale) on Ribes associated with P. lambertiana, P. flexilis and P. monticola, but none of these white pine were infected.

Messrs. Wyckoff and Goodding are scouting in the five-needled pine regions of Texas and New Mexico. Mr. Stillinger is scouting in southern Idaho, and Mr. Root in Montana.

GENERAL

Department Circular 177 on "Treatment of Ornamental White Pines Infected with Blister Rust, "by Martin, Gravatt and Posey is now being distributed. If you do not receive your copy, write the Washington Office for it.

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Mr. R. B. Corbett has resigned to reenter Cornell University.

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Dr. W. A. Taylor, Chief of the Bureau of Plant Industry, has recently spent ten days with Mr. Detwiler making a thorough field inspection of the blister rust control work under way in New England and New York.

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Plans have been made for starting the inspection of nursery stock for violations of Federal Quarantine 26 at various transfer points about October 1. Mr. Stillinger will have charge of the field work with headquarters at Omaha.

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Mr. A. H. Hill of the D. Hill Nursery, writing on August 27, states that at the convention of the American Association of Nurserymen last June, at which Mr. Detwiler was present, "a motion was made and carried that two committees be appointed; one to cooperate with Mr. S. B. Detwiler in the compilation and necessary publication of an easily understood edition of the Federal and State Quarantine Regulations; the second committee to cooperate with the Federal Horticultural Board in such ways as the Federal Horticultural Board should request, the particular function of this committee to be to endeavor to work out methods of enforcing the various quarantines."

CONFIDENTIAL NEWS LETTER

Issued by

The Office of Blister Rust Control

Vol. 6

1922

BUREAU OF PLANT INDUSTRY

U.S. Department of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Plant Industry

Blister Rust Control March 28, 1922.

NEWS FOR BLISTER RUST WORKERS
(Confidential Letter - not for Publication)

EASTERN STATES

MAINE -

In 1921 mapping of pine and Ribes areas was carried on with preliminary scouting. A house to house canvas was made of pine owners, explaining the danger to their pine crop from blister rust, and practically all of them co-operated with the State in protecting their trees. Seven townships were covered during the year, all in York County.

A large window display was placed in one of the prominent stores in four of the large centers of population in the towns visited. These attracted very favorable attention and produced good educational results.

A check was made on the demonstration control area at Alfred where Ribes were eradicated in 1917 and after four years no new infections were found originating since control measures were applied in 1917. 156,221 acres were covered in 1921, and 41,476 Ribes were removed at an average cost of $.22 per acre.

Messrs. Hodgkins and Streator have been trying out the new educational plans in Maine this winter under the direction of the Forest Commissioner, interviewing property owners and other influential citizens, showing them the blister rust on their own pine as far as possible, and securing their interest and cooperation in controlling the blister rust by eradicating the Ribes on their property next spring. The results of their work are very encouraging, pine owners showing great interest in the protection of their pine crop.

In the town of Berwick, Maine, Mr. Streator interviewed 86 pine owners, an average of 5.2 calls a day, who expressed their willingness to remove the wild and cultivated Ribes on their land during the coming season. The total acreage owned by these 86 persons is 10,207 acres. Only one property owner refused to cooperate. Next spring this town will be scouted and the Ribes areas marked. Then each owner will be shown the Ribes plots on his property and the scout will demonstrate to him the best methods of eradicating the bushes.

In the town of Lebanon, Mr. Hodgkins interviewed 172 owners, and all but three agreed to destroy the Ribes on their land next spring, if shown how to do it. A total of 19,058 acres were signed up for eradication work in this town.

Mr. Hodgkins reported several examples of pine values in this town. About 18 acres of land, having a good stand of growing pines, was bought for $400.00, held over night and sold for $4 50.00, the purchaser held it for 16 years, and a few years ago sold the timber to the first buyer for $10,000.00.

In another instance $4,500 worth of pine timber was taken from about 3 acres. Another 40-acre tract was bought for $200.00, held for 18 years and the pines sold for $5,000 - all other timber was reserved

Ninety-four acres of land was bought for $160 and held 60 years. The man who sawed the lumber said he sawed 3,800,000 feet of pine from the lot.

An old couple living in the town, having for years eked out an humble existence on their farm, recently sold the pine from a lot in the back of the farm for $18,000. White pine is the farmers' saving bank.

One of the selectmen in Labanon said to Mr. Hodgkins - "Show me a person in the town who has money, and I will show you where he got it from pine."

A number of articles on the blister rust have appeared in the various Farm Bureau papers and in the Maine Farmer, according to a note from Mr. Dana.

Newspaper notices have also appeared in local papers where men were working on the blister rust.

NEW HAMPSHIRE:

The Governors of Maine and New Hampshire called meetings of Town Selectmen to discuss the blister rust situation and to urge town appropriations. These meetings were well attended and considerable interest shown.

Messrs. T. J. King and K. J. Braden have been engaged in educational work during the winter months with marked success. Many new spot infections have been found in each town worked. Without any special effort Mr. King located infection on 16 different estates in the town of New Durham and at 11 places in Alton.

For the past month Mr. King has been spending all his time on Blister Rust educational work in Strafford County and has obtained very encouraging results. To date five of the towns in this county have appropriated a total of $2,000 for control work.

Mr. King has an article on "The White Pine Blister Rust Situation" which appeared in the February, 1922, "Service," the monthly publication of the Johnson Company of Manchester, and in the Strafford County Farm Bureau News.

In a recent report from Mr. Braden he states the pine infection in Haverhill and Monroe probably ranges from 25-50% and in spots heavier. He could collect a cord of branch infections in an hour in many places.

Private funds have been raised for cooperative work; the selectmen in many towns inserted articles in the Town Warrant, calling for appropriations for control work in cooperation with the State Forester; influential men, including local editors, have been shown the damage caused by the blister rust and are convinced of the necessity for action by pine owners in the control of the disease.

The Forestry Department has lately printed a leaflet on "The White Pine Blister Rust Situation in New Hampshire". Quoting from this leaflet: "What do persons outside the Department think of blister rust?" A large pine owner: 'The Forestry Department has been too conservative in its statemen ts as to the seriousness of blister rust.' A lumberman: 'If blister rust is not controlled, we need worry no longer about taxation of our pine lots'".

A total of 95 towns and 162 individuals have appropriated funds for blister rust control from 1918 to 1921. Sixteen towns have been completely covered by eradication crews. Since 1917, 594,716 acres have been worked at a per acre cost of $.212 and 6,798,190 wild and 62,017 cultivated Ribes have been destroyed.

Mr. Newman writes March 22: reports have just been received that 34 towns have appropriated $10,500 for cooperative blister rust control work. Fifty towns have yet to be heard from.

In 1921, 136,233 acres were covered in the State; 1,031,216 bushes, wild and cultivated, being removed at an average cost of 16¢ per acre.

In a recent report from Mr. Hodgkins he says "I have found infection conditions so much worse than I expected that I feel duty-bound to place the matter squarely before you in an endeavor to convince you that what has been said regarding the danger from blister rust has been regarded altogether too lightly, and is much more serious than was first supposed. In my work the past season I have seen thousands of dead and dying pines from blister rust. This disease is one of the greatest, if not the greatest menace, to this part of the country of all plant pests or tree diseases." Then follows a series of plot and strip studies of pine infection in New Hampshire that show definitely that Mr. Hodgkins has not over-estimated his above statement. Five 1/7A plots, separated about a mile apart in the town of Littleton, N.H. showed infection on from 63-92% of the trees.

VERMONT:

The forest type survey has been continued during the winter months and is progressing rapidly considering the small number of men employed on the work. Previous to this year 70 townships were mapped; this winter 79 were completed, making 149 finished and leaving 98 townships and 3 small gores (a thinly settled and unorganized portion of a county) yet to be done.

Mr. P. H. Merrill has returned from Sweden where he held one of the three Scandinavian scholarships in forestry. Previous to his year's study there he was engaged in blister rust work in Vermont. Mr. Merrill is again with the Vermont Forestry Department.

During the winter months Messrs. Rose, Bradder, Holden and Teachout have been doing field and office work on the forest type survey. Mr. John W. Porter is also engaged on this work. On March 1 he leaves the work to enter the New York Ranger School at Wanakena, New York.

MASSACHUSETTS:

In 1921 blister rust infection on Ribes was widely prevalent but not so heavy as usual, owing to the dry season. All control work in the State was conducted on a local cooperative basis. Three towns appropriated $1200, and thirty-five property owners subscribed $2,434 as compared to $2,377 for 1920 and $1,575 for 1919.

In most cases local labor was employed for eradication of Ribes. Seventy-four checks on the Ribes eradication work of 1921 showed an efficiency of 96.9%. A total of 32,933 acres were examined for Ribes and a total of 631,516 Ribes bushes were destroyed at an average cost of 33¢ per acre.

Mr. W. J. Endersbee carried on educational work in January and February, 1922, in the town of Boxford and succeeded in getting practically all the pine owners to agree to destroy the Ribes on their property next season. The State Department of Agriculture has received $8,000 for blister rust work, and a bill for an additional $20,000 is under consideration.

RHODE ISLAND:

During 1921 seven scouts worked in Rhode Island covering 26,971 acres at a cost of 14¢ per acre. 16,022 wild Ribes were destroyed. Several new spot infections on pine were discovered during the year.

CONNECTICUT:

During 1921 a total of 8,000 acres were eradicated at a per acre cost of 33¢ - 41,470 Ribes being destroyed. Considerable pine scouting was done during the season and several new spot infections found.

NEW YORK:

Work on eradication shows the State destroyed the Ribes on 8,04 3 acres on State land and 6,140 acres on private land, a total of 14,183 at an average cost of $3.28 an acre. The lowest done was at $1.38 an acre, and the highest at $5.11 an acre. The Ribes averaged 86 bushes per acre and consisted mostly of large gooseberry bushes. A selective eradication and demonstration control area was partly worked last season and the experiment will be continued during the coming year. It is hoped to prove by this experiment that Ribes under certain conditions, depending upon screening, topography, species and distance to pine, need not be eradicated.

Since control work closed six men have been making an extensive State-wide survey for the blister rust on white pine. Although no report has yet been made it can be stated that the disease has been found on pine in isolated localities throughout the whole State. There is but a very little pine in the central and western parts of the State, and as yet the disease shows up only to a very small extent. In connection with the scouting, educational work was done, and already considerable action has been taken and plans made for work this spring on private land. Especially has this been the case in the Southern Catskills, where several thousand acres are already "lined up"

for work in April. At present, due to the bad road conditions North of Albany, the six men are continuing the pine survey in the Lake Champlain watershed where the work was stopped late last winter.

The State appropriation bill has passed the legislature, including an item of $50,000 for blister rust work for the coming year.

WISCONSIN:

Mr. Ninman has been speaking at farmers' meetings throughout the pine regions on the Farm Woodlot, emphasizing the value of white pine and the need of protection from the blister rust. Mr. Ninman writes that the Litnum Bronze Company, Menominee, Wisconsin, can supply the "farm pick" at $2.00 each. These are the Ribes picks which Wisconsin found to be most serviceable.

Mr. Filler has planned a Ribes demonstration control area at Eau Galle for 1922 and 500 young white pines will be planted there this year on the property of Mr. Schlosser.

The State Department of Agriculture has received the hearty cooperation of the farmers and pine owners in the counties containing the worst infections.

Applications were received last season from 90 farmers who were willing to take out the Ribes on their property if the State would supervise and complete the work.

More than three-fourths of all the pine stands on which Ribes eradication is needed in Polk County have been protected, the total Ribes eradication area for the past two years being in excess of twenty thousand acres.

Enough farmers have already done their share of the work in this general area to keep one crew busy throughout the coming summer checking up and completing the work.

Opposition to control work is so rare as to be practically negligible, the only assurance the pine owners want being that their pine will be sure

to survive in case the Ribes are removed.

MINNESOTA:

There is no special State appropriation for blister rust control work, but work on a small scale was financed through cooperation of the State Forest Service and State Nursery Inspector. Very little Ribes eradication work was done in Minnesota during 1921. Private cooperation was secured in the State for the first time and 589 acres eradicated at a cost of $.67.5 per acre. An average of 67 bushes were found per acre.

Mr. Filler has planned a large demonstration control area for 1922 on the Minnesota National Forest, near Cass Lake.

Mr. J. D. Winter resumed his work on quarantine inspection until the middle of April when he resigns to become Deputy State Nursery Inspector.

WESTERN STATES

Since the last office news letter was sent out on September 20, 1921, the white pine blister rust has been found in the Puget Sound region. In most places infection was found on cultivated black currants (Ribes nigrum). Infection in British Columbia was also found on planted 5-needled pines at Vancouver. Mr. Putnam on November 5 and Mr. Bethel on November 24 began scouting in the Puget Sound region; they were joined later by Messrs. Wyckoff and Goodding, with the result that the white pine blister rust was located in Washington on cultivated black currants at four different places: Sumas City, Mount Vernon, Port Townsend and Everett. Late in December, two planted five-needled pines were also found infected with the white pine blister rust at Mount Vernon, Washington.

As soon as the rust was positively identified as the white pine blister rust, a conference was called at Portland, Oregon, on December 19, 20, 1921, by Prof. H. P. Barss as Chairman, for the West, of the Advisory Board

of American Plant Pathologists. Prof. Barss called the first western blister rust conference in April, 1919 to safeguard the West against this disease if possible.

Messrs. Detwiler, Posey, Putnam, Stillinger, Wyckoff and Gooding of the Office of Blister Rust Control, and Messrs. Bethel, Boyce, and Meinecke of the Office of Forest Pathology were present at the conference. The conference included representatives from the various Western states and provinces, lumber companies, nursery associations, and transportation companies. Plans for Canadian, fe deral, State and private cooperations to control the disease were worked out and embodied in the resolutions of the Conference. The plan includes extensive scouting in the West, eradication of black currants in the Northwestern States, and blister rust quarantine enforcement. The executive committee consists of W. D. Hamiston, Chairman, C. A. Park, H. P. Barss, and C. S. Chapman, Executive Secretary.

Mr. G. B. Posey is in charge of the western work with temporary headquarters at 428 New Post Office Bldg., Portland, Oregon, (c/o Dr. John S. Boyce).

The State of Washington has issued a quarantine (No. 7) prohibiting the shipment or movement in Washington of all five-leaved pine, currants and gooseberries within or from that part of the State lying west of the summit of the Cascade Mountains, through or into the rest of the State. The destruction of the English black currant is ordered in the quarantined area.

The Secretary of Agriculture has issued Plant Quarantine 54, prohibiting the shipment of 5-leaved pines and Ribes from the State of Washington, but because of the enactment of State Quarantine No. 7, the restrictions in the Federal Quarantine apply only to the portion of Washington lying west of the crest of the Cascade Mountains.

QUARANTINE INSPECTION

Inspectors for violations of Quarantine regulations began work at their various stations soon after March 1.

Mr. Charles H. Johnson, stationed at Omaha, Nebraska, is in charge of the Field Office and all inspectors at Mississippi Valey points send their reports to Mr. Johnson. So far four violations of Quarantine 26 and one violation of Quarantine 54 have been reported.

The establishment of Quarantine 54 increases the amount of inspection work. Messrs. Posey and Stillinger are in general charge of inspection. In addition to the regular blister rust force, the Forest Service has detailed six additional men for temporary work on quarantine inspection. Assignments to date are as follows:

Mr. Chas. H. Johnsen	Omaha
Dr. Wm. E. Pickler	"
Mr. C. E. Randall	Council Bluffs
Mr. W. J. Endersbee	Chicago
Mr. J. L. Richards	" (until March 17)
Mr. H. J. Ninman	" (after March 17)
Mr. E. J. Streator	"
Mr. K. J. Braden	St. Louis
Mr. L. W. Hodgkins	Kansas City
Mr. Theodore C. Parker	" "
Mr. J. D. Winter	St. Paul
Mr. Leslie N. Goodding	Denver
Mr. Geo. A. Root	Ogden
Mr. Henry N. Putnam	Spokane
Mr. C. R. Patrie	Headquarters Portland
Mr. Norman L. Cary	" "
Mr. Earl R. Liddell	Kansas City
Mr. Daniel S. Curtis	Chicago

PERSONNEL

Dr. J. F. Martin has just returned to Washington from a three weeks' trip into the infected areas of Vermomt, New Hampshire and Maine, where in company with Mr. Brygger, photographer of the Department of Agriculture, he secured photographs showing the damage to white pines from the blister rust.

Mr. J. H. Arnold, formerly of the Cambridge Office, resigned Jan. 31, 1922, to accept appointment in the Bureau of Internal Revenue.

Miss Mary Gallagher, formerly of the Washington Office has returned to work after fifteen months' absence.

The Boston Office is tempo rarily closed for about a month as the field men are now on quarantine inspection work and Mr. Filler is in Washington.

Mr. John M. Corliss resigned October 31, 1921, after completing his quarantine inspection work in the Middle West. During the winter he was engaged in private forestry work in New England employing about 30 former blister rust employees. Mr. Corliss will return to blister rust work this spring with a majority of his men.

Dr. Perley Spaulding of the Office of Forest Pathology sails for Europe April 5 to be gone until December, investigating the white pine blister rust. He will visit every country in Europe where the blister rust has been collected, except Russia.

LEGISLATION

The Urgent Deficiency Bill carrying $150,000 for blister rust work was signed b y the President March 20, 1922. This money is made immediately available. The Agricultural Appropriation Bill for the fiscal year beginning July 1, 1922, carries $175,000 for blister rust work, $50,000 of which will be made immediately available. This bill is under

consideration in the Senate Appropriations Committee, having been passed by the House on March 14.

GENERAL

The motion picture film, "White Pine-Beautiful and Useful", will be ready in a short time for distribution.

LITERATURE

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Hawley, Ralph C. - "Progress Report of the Results Secured in Treating Pure White Pine Stands on Experimental Plots at Keene, New Hampshire" - Yale University School of Forestry Bul. 7, 1922 - pp. 1-33.

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UNITED STATES DEPARTMENT OF AGRICULTURE

Bureau of Plant Industry

Washington

Blister Rust Control July 21, 1922.

NEWS FOR BLISTER RUST WORKERS

(Confidential Letter - not for Publication)

EASTERN STATES

MAINE -

The following men have been appointed as Field Assistants or Agents to be engaged in educational work under the direction of Mr. W. O. Frost:

Harold P. Andrews,	Arthur J. Lambert,
Adolph L. Bisson,	Guy H. Kimball,
Solon D. Conner,	I. McKechnie,
Daniel S. Curtis,	Perley S. Turner,
Dwight B. Demerritt,	Myron E. Watson,

In May Mr. Frost accompanied the Motion Picture Photographer and Mr. Pierce on a trip to Kittery Point, Maine and South Deerfield, N. H., where photographs were taken of the damage caused by the rust, and to Brunswick, Maine, where some of the finest white pine remain. A number of the pines which were measured, had a diameter at breast height ranging from 2.80 feet to 3.34 feet. Their height was estimated at above 100 feet.

NEW HAMPSHIRE -

In New Hampshire, town cooperation is being carried on as usual and crews are located in Lee, Barrington, Hopkinton, Londonderry, Milton, Manchester and Nashua. Eradication work for this season has been completed in the towns of Lee and Concord.

One of the most recent developments of interest along blister rust lines is the work carried on a few weeks ago by Mr. W. J. Cullen in the town of Lyndeboro. This town appropriated $100 for blister rust investigations and Mr. Cullen

was in charge of this work. He located 119 infections at 52 different points, taking out the owner of each infected area and showing him the disease and also giving field demonstrations to town authorities and other local people. As a result of his work a special town meeting was held to see what could be done about making a special appropriation for control measures. It is interesting to note that while they have not succeeded in getting enough people to attend the town meeting so as to secure a quorum, a vote taken at this special town meeting showed that everyone present was in favor of the work. In addition to arousing such a sentiment, Mr. Cullen has also secured five local cooperators who are paying for the work on their own land. He is now engaged in carrying out similar work in Francestown and has already secured some private cooperation.

Mr. T. J. King, blister rust county agent in Strafford County, has been meeting with marked success. He has secured several cooperators in each town that voted funds for the work and has several other land owners who have signed up for control work in adjoining townships. So far Mr. King has secured local appropriations amounting to nearly $2,000.00.

Mr. J. M. Corliss has been working in Walpole. $1,500 has already been subscribed for blister rust control in this town and Mr. Corliss feels quite confident that a large percentage of the town can be covered through private subscriptions. The cities of Nashua and Manchester have also appropriated funds for controlling the blister rust.

The following have been appointed field assistants and will be engaged entirely on educational work: Frederick J. Baker, K. E. Barraclough, Locke Bullock, J. J. Fitzpatrick, Denis B. Keane, Thos. J. King.

A training camp for preparing the educational agents was conducted at Littleton, New Hampshire, from May 24 to June 3, under the direction of Mr.

E. C. Filler, in charge of Federal blister rust work in the Northeastern and Lake States. He was assisted by Messrs. Frost, Newman, Perry and Riley. The men were put through an intensive course of training, which included many field trips. Special lectures were given by various state officials, including Mr. H. O. Cook, State Forester of Massachusetts, Mr. W. G. Hastings, Chief Forester of Vermont, and Mr. E. P. Robinson, County Agent Leader in New Hampshire.

One of the heaviest pine infections in the State is at Littleton, N. H. The infection on one property reached nearly 90%, while a strip survey and an examination of sample $\frac{1}{4}$ acre plots in September, 1921, showed pine infection ranging from $62\frac{1}{2}$ to 92%.

The earliest dates for the uredinial stage of the blister rust on Ribes reported for New Hampshire were May 22 at Lisbon, New Hampshire, by Pierce and Hodgkins, and May 23 in Strafford County by Mr. T. J. King.

VERMONT -

Mr. Riley sends news under date of May 22. Three Field Assistants have been appointed to carry on educational work. They have already taken up their duties in their respective districts. S. V. Holden has been assigned to the Brattleboro district, comprising parts of Windham and Windsor counties; Frank H. Rose is in charge of the White River Junction district, comprising parts of Windsor and Orange counties; W. E. Bradder will assume charge of the Wells River District, comprising parts of Orange and Caledonia counties. These three districts comprise the White Pine sections of the Connecticut River Valley.

Very gratifying results have already been obtained in securing the cooperation of small pine owners in Windham and Windsor counties. One crew is working at Vernon, and one at Windsor.

Pine infection is showing up in many new places in Vermont this summer.

They are particularly noticeable in the central and southeastern portions, where pine infection has heretofore been very light.

Vermont is concentrating this year on securing the cooperation of the small pine owner who has just a few acres to protect and will do the work himself. Much of Vermont's pine is in these small holdings.

We are glad to welcome two new foremen to our organization - Mr. R. Z. Heath, of Shoreham, Vermont, who worked last year as an advance scout in Massachusetts, is now in charge of a crew in the Brattleboro district. Mr. George Stevens is foreman of the crew at Windsor. Mr. Stevens is a graduate of the New York State Ranger School at Wanakena, New York, and previous to his course there was engaged in Ribes eradication in New York State.

Congratulations are to be extended to Frank Rose and W. E. Bradder. Mr. Rose was married at Cohoes, New York, May 29, and Mr. Bradder was wed at Manchester, Vermont, in June.

MASSACHUSETTS -

Several Field Assistants have been appointed to aid Mr. Perry in educational work in the state - Messrs. Earle M. Brockway, Chas. J. Lihme, Robert W. Merrick, William T. Roop.

Mr. Alfred E. Fivaz will assist Mr. Filler; working from the Boston Office. Miss Esther M. Rice has been appointed stenographer and typist and assigned to the Boston Office.

One of the earliest reports of the aecial stage on white pine for this year was the collection by Mr. F. E. Gould at Topsfield, Massachusetts, on April 8.

RHODE ISLAND -

Mr. Wm. H. Cameron and Frederick E. Regan have been appointed educational agents, and will work under the direction of Mr. Sheals.

CONNECTICUT -

Mr. Harold Round has been appointed Field Assistant in Connecticut and will be engaged in educational work.

A new bulletin #237 has just been issued by the Connecticut Agricultural Experiment Station, written by Messrs. Filley and Hicock. It is entitled "Control of White Pine Blister Rust in Connecticut - 1909-1921".

NEW YORK -

The following agents have already been appointed to take up educational work in New York: Professor Burr N. Prentice, who will be in charge; Phillip M. Browning, Samuel E. Davis, Fred F. Franklin, Noble H. Harpp, Orlin Magee, Thos. C. Maxwell, Harry A. Williams, Ernest G. Woodward.

Mr. J. W. Toumey, Jr. is in charge of the experimental work on the North Hudson area. He has as assistants Robert S. Carruthers, Olaf C. Anderson, Duncan G. Rankin.

MICHIGAN -

Mr. Dow V. Baxter has been engaged to carry on the scouting work in Michigan, it being felt that there was danger of the blister rust still existing in Oakland County where several pine infections were found in previous years, or in other parts of the state on nursery shipments, or that it might have spread to the State from Ontario or Wisconsin. No blister rust was found in Michigan in 1920 or 1921. On July 9, 1922, Mr. Baxter reported finding the blister rust on one pine at Birmingham, Oakland County, in the same private planting where it was found in 1918.

WISCONSIN -

Blister rust control work was started this season on May 15 by Mr. H. J. Ninman. Preliminary arrangements for work on the Durand Demonstration Area were

made with Mr. E. J. Streator who will have charge of the work there. A crew of three experienced men was hired to commence eradication on May 18, although the full force at Eau Galle will not begin until June 1. There has been no difficulty in securing help; in fact, the number of applicants has greatly exceeded the number needed. The majority of those hired have had more than one season's experience.

Most of the work outside of the Eau Galle area will be done in northern Polk and southern Burnett Counties, which districts combined contain approximately 6,000 acres. Other and smaller areas in St. Croix, Barron and Dunn Counties will receive attention this season, when the eradication at Eau Galle is completed.

On May 23, Dr. S. B. Fracker visited the Durand Demonstration area, and consulted with Mr. Streator.

Mr. Thompson, who was on quarantine inspection at Sioux City, Iowa, until May 18, has been engaged since that time in educational work and scouting. At present this work will be devoted largely to locating areas in which it is advisable to eradicate Ribes and to consulting with the farmers and other landowners, while this preliminary work is carried on. He has been working in Dunn, Marathon, Lincoln, Shawano, Langlade, Forest and Waupaca Counties.

A new infection area was reported by Mr. Thompson on June 22, about 100 pines being found diseased, scattered over 1/2 mile at Elk Mound, in eastern Dunn County. Some of the trees had been diseased for ten years. Preliminary plans have already been made for Ribes eradication in this area.

MINNESOTA -

Mr. Kenneth J. Braden, who has been working in the East this past year on blister rust control, returned to Minnesota, April 28, where he was engaged in quarantine inspection until the 15th of May. Since that time he has been on educational work. In Little Falls, cooperation has been secured and Ribes eradicated in the City Park where there is a fine stand of mature white pine.

THE WESTERN STATES

The western branch of the Office of White Pine Blister Rust Control was moved May 16th from Berkeley, California, to a permanent location at 429 Lyon Building, Seattle, Washington. Mr. G. B. Posey is in charge of all federal blister rust work in the Western United States.

Mr. S. B. Detwiler left Washington on a tour of the Western States on April 7 to confer with State and Provincial officials and aid in organizing the Northwest. He returned to Washington on July 3. While scouting near Sumas, Washington, Mr. Detwiler met with an accident, resulting in a broken right arm.

The planning of the summer's work, organization and training of the scouts has been completed and the men are now in the field. The plan is to scout all the western states covering the different regions as thoroughly as practicable. In Washington, Oregon, California, Idaho and Montana special attention will be given to locating black currants with the idea of destroying them in regions where it seems necessary. A program for the complete eradication of black currants is now under way in ten counties in the Puget Sound region of Washington.

WASHINGTON -

Infections on cultivated black currants have been found this year in two places in Washington, at Clear Lake and Edison, both in Skagit County near Puget Sound.

The work in western Washington under State and Federal men has been divided into two parts. Five special Federal men under the direction of Mr. Robinson, Supervisor of Horticulture, and in addition to the regular state force will destroy all the black currants and other host plants found diseased. Messrs. Hess, Moreland, Smith, Shinn and Paul Young started this work in Whatcom County June 21st, where for a time they will locate as well as eradicate black currants.

The federal men will scout for the disease and locate all black currants to be taken out later by the State forces. Eight men from Washington State College under Mr. H. N. Putnam, supervisor, and Prof. B. F. Dana, chief scout, will cover in the order named the counties of Skagit, Snohomish, Island, San Juan, King and Pierce. These men are Messrs. Brown, Leonard, Lackey, Spiegelberg, Sprague, Walker and Huber. Prof. Dana will be on the work until the middle of July, after which time Prof. E. H. Steffens will take up his duties.

Mr. C. H. Johnson, assistant supervisor, and Dr. J. W. Hotson, chief scout, with eight men from the University of Washington will cover the counties of Clallam, Kitsap, Jefferson, Grays Harbor, Mason, Thurston, Pacific, Lewis, Wahkiakum, Cowlitz, Clarks and Skamania. These men are Messrs. Eddy, Simcoe, Lungreen, Bricker, Anderson, Bowman, Wirt, Osa.

All of the scouts had preliminary training under close supervision of experienced men in distinguishing various species of Ribes in Seattle under Messrs. Putnam, Root, Johnson and Renner. Two or three scouts were assigned to an experienced man. They were instructed how to search for and inspect cultivated Ribes and white pines, how to approach people and tell the blister rust story and how to recognize blister rust on both pines and Ribes.

In eastern Washington, Mr. L. N. Goodding, assisted by Mr. Bach and two other scouts, will cover the region east of the Cascades scouting for disease. They will scout for the disease on Ribes and pines and locate as many bladk currants as possible in regions where they work. This work will begin July 1st.

OREGON -

Scouting in Oregon began June 21 under the direction of Mr. Epling assisted by Messrs. Dykstra, Duncan, de Macedo, Parker, Wilbur, Shorett, Gaines & Ferguson,

all from the Oregon Agricultural College. The counties to be covered first are Clatsop, Columbia, Multnomah, Hood River and Washington in the order named. Mr. Epling will be in close touch with Mr. George A. Root, who will be in Oregon on nursery inspection.

IDAHO -

Scouting in Idaho for the disease and cultivated black currants began June 12th under Dr. Henry Schmitz. Assisting Dr. Schmitz are Messrs. Snow, Ryan, Stone, Perkins, Bradfield and Glindeman. The work will start from the northern boundary of Idaho and extend southward.

MONTANA -

Scouting in Montana under Prof. John W. Stephen began June 15th. Messrs. Severns, MacNearney and Graham, Federal scouts, will assist him and cover the white pine region thoroughly. The state inspectors will scout for the disease and locate the Ribes and white pine outside of the pine area.

CALIFORNIA -

Prof. Garrett will arrive in Sacramento June 27th to conduct the work in California in cooperation with Mr. Lee Strong, Chief Quarantine Inspector. Prof. Garrett will have three assistants, two of which will be transferred from the Oregon group and will work with state and county officials, inspecting black currants. Mr. Wyckoff is now in California making preliminary arrangements for Prof. Garrett's work.

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After the preliminary training all new men were taken to Abbotsford, B.C. An infected pine area was inspected under the supervision of Prof. Bethel, Prof.

Studhalter, Mr. Putnam and Mr. F. M. Knapp. Fruiting bodies on pine were observed as well as infection on black currants. This was given as final training.

EDUCATIONAL WORK IN THE WEST -

In conjunction with the development of the blister rust campaign, arrangements have been made to secure close cooperation with organizations, such as Boy Scouts, Camp Fire Girls, Mazamas, Forest Service, etc. Messrs. Frank A. Brown, A. J. Seltzer and Stanley A. Barton, under the supervision of Mr. Stillinger, will instruct members of these organizations in the essential facts concerning the disease. They will develop in these organizations an efficient auxiliary scouting force. The members will be instructed to report the location of white pine areas, black currants and infections on pines and currants.

Publications regarding the disease are being distributed to the entire field force of the Forest Service in Districts 1, 5 and 6. The Forest Service is giving complete cooperation in blister rust work and will report plantings of black currants on isolated farms and villages in their districts, and furnish data on native white pine and native Ribes. Infected pines and Ribes will be reported at once if found.

The fire protective associations in Washington, Oregon, Idaho and Montana and the Boys' and Girls' organizations in Oregon, Washington and Idaho, are giving full cooperation. Arrangements similar to those with the Forest Service have been made. Summer camps will be visited as far as possible and information given regarding the disease. An extensive school campaign to locate cultivated black currants will be put on in the fall.

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INVESTIGATION -

Dr. J. S. Boyce, Office of Forest Pathology, Portland, Oregon, is conducting the investigative work on the relative susceptibility of Ribes, the spread of the disease under western conditions and potential barriers, both natural and artificial, separating the pine region from the areas of infection. He is assisted by Dr. L. H. Pennington, Mr. H. G. Lachmund, Prof. W. E. Lawrence, Prof. V. H. Young, and Mr. W. A. Rockie.

BLISTER RUST INFECTION IN BRITISH COLUMBIA -

Blister rust infection near Abbotsford, B.C., four miles north of Sumas, Wash., is the farthest east the disease on pine has been found. The infection is scattered over an area of approximately a square mile. The infection is 2-1/2 miles from the boundary line between the United States and Canada and two miles from Abbotsford. Over this area are scattered patches of young western white pine (Pinus monticola) which sprang up after land clearing operations and small fires. Large seed trees scattered through the area reseeded it wherever the cover was broken and mineral soil exposed. Mr. Knapp has completed a detailed map of the infection, showing roads, location of pines and currants. Professors Bethel and Studhalter spent several days scouting the area for wild Ribes and further pine infection. A brush fire entered the timber June 19 and destroyed most of the young pine. Blisters were found in abundance on planted and native western white pine near Vancouver, B.C., on May 17 by Mr. A. T. Davidson, in charge of scouting in British Columbia for the Dominion Government, and by Prof. J. W. Eastham, Provincial Plant Pathologist. Mr. Davidson had earlier found infected native white pine at Qualicum Beach, Vancouver Island. Mr. Davidson also found infected native white pines at Langley Prairie, Mission City and Whonnock, but no disease was located at Chilliwack Lake or Revelstoke. Prof. Eastham found an extensive infection, about six years old, on native pine at Crescent Bay on

Valdes (or Quadra) Island about 120 miles north of Vancouver. Infected pines were also found on Cortez Island. Prof. Bethel found an infected white pine in British Columbia at a point about one mile north of the border, near Blaine, Washington. The uredo stage on cultivated black and red currants was found at Langley Prairie by Prof. Bethel on June 11th.

QUARANTINE INSPECTION

Miss Thompson has compiled data regarding quarantine violations which is given below.

Total number of violations of Quarantine 26 equals 118, of which 109 were Ribes and 9 were pine. Sixty of the violations were by nurserymen and 58 by private individuals. A list of the number of violations of Quarantine 26 found at the various inspection stations this spring is as follows:

Kansas City	41
St. Paul	28
Reported by California officials	11
St. Louis	10
Omaha	9
Sioux City	7
Ogden	3
Denver	3
Spokane	3
Voluntarily reported by senders	2
Portland, Oregon	2
Chicago	1
Multonah, Oregon	1
Moorhead, Minn.	1
	122
Violations caught a second time by inspectors - - - -	4
Total Violations - - - - - - -	118

In comparison with a total of about 231 violations found during the spring of 1921, the decrease to 118 during the 1922 season is encouraging. Also, the percentage of violations by nurserymen during the spring of 1921 was 81 percent, compared with 62 percent in 1922.

Eleven violations of Quarantine 54 were reported, only one of them being by a nurseryman. All of these violations were shipments of Ribes. The places where these violations were observed were as follows:

Seattle - - - - 4	Vancouver - - - - 2	Portland - - - - 2
Tacoma - - - - 1	Sacramento - - - - 1	Spokane - - - - - 1

UNITED STATES DEPARTMENT OF AGRICULTURE

Bureau of Plant Industry

Washington

Blister Rust Control

August 31, 1922.

NEWS FOR BLISTER RUST WORKERS

(Confidential Letter No. 3 - not for Publication)

EASTERN STATES

MAINE -

Thirteen educational agents are now engaged in blister rust work in York County, according to a letter from Mr. Filler. Mr. C. W. L. Chapman has been added to the field force in this state since the July issue of the News Letter.

NEW HAMPSHIRE -

Thomas L. Kane and Henry W. Robb have been recently appointed for blister rust work. Mr. Robb will probably be assigned to Grafton County, K. E. Barraclough to Rockingham County, L. Bullock to Hillsborough County, F. J. Baker to Cheshire County, T. J. King to Merrimack County, J. J. Fitzpatrick to Belknap County, D. B. Keane to Sullivan County and W. J. Cullen to Strafford County. Messrs. Newman and Corliss are giving direct supervision to the men.

Mr. Newman recently found a general infection in the town of Whitefield, Coos County, New Hampshire. This is the most northerly point where pine infection has been found in the state. Newman reports excellent growth in pine plantations on the Thayer Estate, at North Dorchester, the average annual height growth being about 3-1/2 feet per tree.

Mr. Corliss, on August 10, sent in an interesting report of the effect of educational work in stimulating pine owners in protecting their pine land in the Town of Walpole.

"No town appropriation was available for Ribes eradication. At the town meeting this spring the (blister rust) appropriation failed of passing because no one knew what it meant, or even what it was about.

"As a result of personal interviews this year, 15 citizens subscribed a total of $1238.00 for blister rust control, the sums ranging between $2.00 and $350.00. A total of 1308 acres of land are owned by these cooperators. On 1046 acres 18,700 Ribes have already been removed.

"While only a few pines were found infected on most of the properties, indicating that the Ribes eradication work was being carried on before serious damage was done, yet in the case of the Walpole Water Works 20% of the pines in a 70 acre plantation were already infected. In this plantation the only Ribes found were on stone walls which bordered the pines. These Ribes were all heavily infected."

Mr. King sends in the log of two day's work in New Hampshire which has considerable sales value in it.

"Tuesday evening, August 15th, I went to Pittsfield, N. H. where one of my crews was working. I interviewed the Chairman of the Board of Selectmen and got his word that he and at least one other member of the board would come out into the field with the crew the following morning He and a second member of the board was present the next morning at 7 o'clock and watched the crew at work for about two hours. The line-up of the crew and reasons for doing certain things were explained to them. They expressed considerable surprise at the thoroughness of the methods employed by the crew. They were next shown an area of several acres of serious infection and left the field expressing the feeling that their previous conceptions of the manner in which we handled our work had been entirely changed and that they now felt our methods met the situation admirably.

"About ten o'clock that same morning I left the crew and went into town. I interviewed the leading druggist and got his permission to put in a window display the following Saturday morning. Crossing the street I went into the local newspaper office, talked with the editor a few minutes and secured space enough in his paper for a "short article on the blister rust. This stated what the blister rust crews were doing and that an agent would be present at the drug store on Saturday to meet persons interested in the control of this disease.

"Saturday morning, as stated in the article, I was on deck in Pittsfield. I went out into the field and secured specimens of both pine infection and Ribes. Before I got back into town I was stopped twice by interested parties. I drew up before the crew's boarding place and had hardly come to a stop when six men came across the street and started plying me with questions. For nearly two hours I was kept as busy as anyone would want to be explaining the nature of the disease and our methods of handling the work. Something like sixty men gathered about my machine in that time and as I looked them over it reminded me of the oldtime Indian medicine man coming into a village and having the whole township gather around his team, personifying curiosity. Finally I had to tell them that it was necessary for me to put the specimens into the drug store window and that if they would come over I would be glad to talk with them afterwards. Upon entering the drug store the proprietor informed me that an elderly lady had driven eight miles earlier

in the morning to see the display. She had seen the article in the paper.

"While we were putting in the display a man came in from Epsom, a bordering town, stating that he had seen the article and wanted to get some first hand information on the subject. He was especially interested in learning something about our town system. I made him pay for his information in the way of painting a few signs for my window display. He was 'pleased to have the opportunity to help out' as he put it.

"I left a man at the drug store all afternoon and evening to answer questions. He reported a fair number during the afternoon, but during the evening hours there were more people than he could handle. He secured a list of names of interested pine owners whom I am planning on looking up when I go there next week."

The second training camp for blister rust agents was held at Littleton, August 7 to 12, under the direction of Mr. E. C. Filler. Men attended the camp from each of the New England States and New York. Owing to the experience secured in the first training camp held in May, the training course only took up a week's time.

Mr. Filler writes further regarding the Training Camp:

"Prof. K.W. Woodward spent a full day with us and gave some very interesting talks on general forestry and practical demonstrations in the field. State Leader E. R. Robinson of New Hampshire, also gave some very instructive talks. Newman and Riley visited the Camp and outlined conditions in their States. Messrs. Corliss, King and Merrick told of their experience in getting private cooperation and gave the men some exceptionally good pointers. Endersbee, Hodgkins and I did the general instruction work.

"As at the former camp, I believe the greatest benefit that we derived from the school was the contact we made with the other men. A healthy exchange of ideas along the various lines of our work meant a great deal to all of the Agents as well as the Instructors.

VERMONT -

Mr. Riley, under date of August 23, has sent in a batch of interesting news items.

"Mr. Perry H. Merrill has recently been appointed Agent in charge of the Rutland District, which comprises townships in Rutland and Addison Counties.

"Blister Rust exhibits will be placed at Caledonia County Fair, St. Johnsbury, Vt.; Addison County Fair, Middlebury, Vt.; and Rutland Fair, Rutland, Vt. W. E. Bradder will be in charge of the display at St. Johnsbury, and Perry H. Merrill will take charge of the exhibits at Middlebury and Rutland.

"Very little eradication work has been done on State land this year, partly because a large portion of the State owned pine has been protected in former years and partly because we are concentrating our efforts on education and the securing of the cooperation of the small pine owners. Most of the eradication work is being done in the eastern part of the State along the Connecticut River, where the native pine is most abundant. Window displays have been placed in various towns along the Connecticut River.

"A schedule is now being rounded out with various motion picture houses for the display of the new film "White Pine - Beautiful and Useful". Last year we had good success in arranging a schedule for the Blister Rust film and it proved to be good advertising.

"It is confidentially expected that the results of the eradication season, when time has permitted a careful analysis of the accomplishments, will show that the season 1922 will overtop any other season since Blister Rust suppression activities began; in fact it may not be too optimistic to hope that the season 1922 will see as much accomplished in Vermont in the matter of Ribes eradication accomplishment as in all previous years combined."

MASSACHUSETTS -

Mr. Perry reports that:-

"Educational work in Massachusetts has been in progress in four counties and four additional agents are beginning their work this month. Each county presents a distinct problem, due to differences in the type of pine ownership, the abundance of Ribes, labor conditions etc.

"Bristol: Mr. Charles J. Lihme, in charge. The evident scarcity of wild Ribes in this county indicates that the problem resolves into one involving the proper regulation of the cultivation of the domestic species of Ribes. The work is being conducted on a purely scouting basis and thus far work in the pine areas in the towns of Westport, Dartmouth and Acushnet has been completed.

"Essex: Mr. William T. Roop is continuing the work started by Mr. Endersbee last winter, in the town of Boxford. The pine lands in the town are in small areas and the ownership is so involved that progress has been rather difficult. It is expected that the work in the town will be completed by September 1. Work is also in progress on several large estates in the town of Topsfield. Mr. Roop is finding quite an abundance of recent infections in Boxford. The Essex County Agricultural School is actively cooperating in the work in the county, Mr. Roop having addressed several meetings held under the auspices of the School, including a gathering of all the agricultural teachers in the state.

"Worcester: Work in Worcester County, centers in the town of Winchendon and Royalston, where the land is still producing some of the finest and most valuable stands of white pine within the state. Mr. R. W. Merrick is in charge and has secured the cooperation of the owners of over 30,000 acres of pine lands in these towns. Winchendon,

known as the 'Toy Town', supports a number of wood working industries whose very existence depends upon the continued production of white pine. The owners of these enterprises are keen enough to appreciate the fact and have already taken an active interest in reforestation. Six eradication crews are now at work on the lands of cooperators, under the direction of State Foremen and a State Supervisor, Mr. H. B. Johnson. Good progress is being made in spite of inclement weather, abundant rains and labor troubles. The Chamber of Commerce is cooperating in a splendid way and several meetings have been arranged at which Mr. Merrick has presented the story of blister rust and its control. Mr. R. T. Muller, Assistant Professor of Horticulture, Massachusetts Agricultural College, is assisting Mr. Merrick and is making preparations for blister rust exhibits at the County Fairs during September.

"Franklin County: Mr. P. C. Morse, formerly associated with the Bristol County Farm Bureau, as Business Agent, has this week established headquarters in Greenfield for conducting educational work in Franklin County. Previous to this assignment to Greenfield, Mr. Morse has been of valuable assistance to Mr. Merrick in Winchendon.

"Hampden County: Mr. W. N. Hill has been assigned to work in this county and reports at his headquarters with the Hampden County Improvement League in Springfield on August 22.

"Plymouth County: In charge of Mr. E. M. Brockway. Conditions in Plymouth County are somewhat similar to those in Bristol although there is a much larger pine area and a more abundant distribution of wild Ribes. There is a splendid growth of young pine throughout the county. Very encouraging cooperation is being received in the towns of Lakeville, Rochester and Middleboro. Four State Scouts are working in these towns under the direction of Mr. Brockway.

"Mr. W. D. Black, has been assigned to Berkshire County but arrangements for cooperation with the County Farm Bureau have not been perfected as yet.

"Mr. R. E. Wheeler, formerly connected with the Pennsylvania Chestnut Blight Commission, has been appointed for educational work in this state. Mr. Wheeler will be assigned temporarily to assist Mr. Merrick in Winchendon and later take up the work in southern Worcester County. The appointment of Mr. Wheeler completes the quota of educational agents according to the original plan for the work in Massachusetts.

RHODE ISLAND -

Mr. Sheals reports that no additional pine infections have been found in the state. The educational agents will attend the county fairs in September, where they will have blister rust exhibits at the Kingston, Portsmouth, Fiskeville and Providence fairs.

Beginning September 15 a permanent agent Mr. Anderson, will take charge of the educational work.

CONNECTICUT -

Mr. H. W. Hicock writes, under date of August 21:

"Ribes eradication work has been carried on in Cornwall and Salisbury during the season.

"Work in Cornwall started on May 16th with two crews in the field. To date about 3500 acres of pine have been cruised and some 70,000 Ribes pulled. Cornwall was the first town in the state to raise a fund for Control of the Blister Rust. Up to September 1st approximately $2,000.00 of local funds will have been spent. Cooperation will be on a 50-50 basis, i. e., the state will spend at least as much as is raised and spent locally. So far the state expenditures have not been as great as those of the town but this will be equalized next season.

"Work in Salisbury was not to have been started until 1923 but several large landholders in the town wishes that something be done during the present season and were willing to bear all the expense if necessary. Funds from the state appropriation were not available for a 50-50 cooperation in this town but it was finally decided that one foreman could be hired from state funds. One crew started on July 6th and will continue until about September 7th, by which time some 2,000 acres will have been subjected to control measures.

"Educational work:

"Four agents including the state leader were allotted to Connecticut. It did not seem feasible to assign the agents equally by counties for the following reasons: Of the eight counties in the state, the four northern ones, Litchfield, Hartford, Tolland and Windham, contain practically all the native pine and of these only one, Litchfield, has the blister rust on native pine in any quantity at present so far as is known. The disease has been found to a limited extent on planted pine in the other three counties and to some extent on cultivated Ribes. Wild Ribes exist in quantity only in Litchfield County. One agent, H. F. Round, was assigned to Litchfield County on May 3rd and another, R. M. Hick, to the other three counties named above on August 1st. The remaining four counties of the state, Fairfield, New Haven, Middlesex and New London, have but very little native pine but they do have numerous plantations of white pine, including some of imported stock, and a large number of nurseries. It is planned to assign a third agent to these four counties sometime in October."

NEW YORK -

Reports concerning New York were received from Mr. Amadon, Mr. Toumey and Mr. Filler:-

"There are at present nine eradication crews on State land and five crews working private land. These five crews on private land have been busy for six weeks as a result of the activities of educational agents so far this season. The results that the men have obtained so far show that next year there will be a large amount of land covered on cooperative work. At present the agents are working in the following counties: E. G. Woodward in Warren County, F. F. Franklin in Washington and Rensselaer Counties, N. H. Harpp in Green and Columbia Counties.

H. H. Williams in Schoharie County, Orlin Magee in Hamilton, Montgomery and Fulton Counties, and F. W. Wigsten in Lewis and Herkimer Counties. The tentative program for the fall includes many lectures with the motion picture machine thruout the different counties. The Executive Committee of the Farm Bureau in several counties have signed up the agreement on the educational program, which insures thorough support of the program as outlined.

"S. E. Davis resigned as Educational Agent August 5th.

"P. M. Browning has left blister rust work in New York State and is now with the Forest Commission of West Virginia.

"Dr. H. H. York has been in Warren County collecting data on field investigations.

"J. E. Toumey, Jr. will complete this year the remainder of the 1400 acre demonstration tract at North Hudson. The 9,000 Acre Tract at North Hudson will be finished this year, one of the largest consolidated tracts eradicated in the State so far in blister rust control. Two eradication crews are also working at North Hudson. Although the entire selective eradication experiment will extend over a period of several years, the taking of the preliminary data will be completed by the middle of September, 1922.

"The telial stage of the rust was noted early in July quite extensively, which is unusual.

"Quite generally over the Northern part of the State it has been noted that a great many Ribes have become defoliated early in August, apparently due in part to the leaves becoming heavily infected with the blister rust.

PENNSYLVANIA-

Doctor W. A. McCubbin writes under date of August 19:

"I have just returned from a Blister Rust and Ribes Survey in northern Pennsylvania in the area known to be affected by Blister Rust. We have not found the disease south of last year's infection, and it appears to be an overflow from the New York State section. The Ribes situation is very hopeful, since outside of the northern tier of counties, the wild species are comparatively few and spotty in their occurrence; likewise, very few black currants are grown except near the New York border. No additional pine infections were found this year, which means that only one case of pine infection from local Ribes has as yet been seen here, and it is on the Delaware River at the New York border."

MICHIGAN -

Mr. D. V. Baxter has been scouting over the state of Michigan for the rust and has located infected pine and Ribes in Oakland County between Birmingham and Pontiac and at Long Lake. At the former place numerous currants and gooseberries

were found infected. The species infected were Ribes americanum, aureum, cy cynosbati, nigrum and cultivated red and white currants (R. vulgare). Ribes americanum leads in the number of bushes found infected. Property owners are destroying the infected bushes at their own expense. Pine infection was also found new Birmingham. An isolated pine infection was found at Grand Rapids in a plantation made with French-grown stock.

A school campaign is underway in every county in the State. Circular letters are being sent to the County Commissioners and to the head of schools in towns of 500 or more, for distribution to the teachers. Suspicious specimens are being requested sent in, while the location of cultivated black currant bushes is also being secured.

WISCONSIN -

The blister rust infection area on the Menominee Indian Reserve at Keshena was visited by Mr. Ninman on August 5, in company with Mr. Lloyd O. Grapp, now in charge of the pine nursery at Keshena, Ribes were eradicated in this infection area in 1920. When inspected this year no sign of the rust could be found either on white pine or Ribes.

Mr. Ninman sends me additional notes on the work under date of August 29:

"Blister Rust exhibits will be again placed at the State Fair at Milwaukee, and at the Dunn County Fair at Menomonie, and at the Northern State Fair at Chippewa Falls.

"At present there is an eradication crew working in the Elk Mound pine infection area under Mr. R. M. Fisk as foreman. It is the intention to remove the Ribes from that part of the area immediately dangerous, and remove the infected pines before next spring. The area surrounding the main infection is to receive further attention next summer, some of the farmers having already promised to cooperate.

"A considerable number of Ribes bushes have already lost more of their leaves. One of the crews will probably discontinue work about Sept. 4th. The federal crew at Eau Galle will probably discontinue work about Sept. 10. The third and last crew will probably keep at work until Sept. 15.

"A Ribes infection was recently found at Cedar Falls, Wis. This infection is in a territory where no infections were found previously, and is within 4 miles of valuable ornamental pines at Menomonie."

MINNESOTA -

During July and August Mr. Braden, agent in charge of work in Minnesota, has been scouting for the blister rust and interviewing owners in connection with controlling the disease at Duluth, Carlton, Sawyer, Cloquet, Moose Lake, Pine City, Bemidji, Grand Rapids and Brainerd. He is enlisting the cooperation of County Agents and Forest Rangers. Exhibits of the blister rust have been shown at County Fairs at Bemidji and Grand Rapids.

Mr. Charles M. Roberts, for five years superintendent of Itasca State Park, is working in the southern part of the pine region of the State on blister rust control.

WESTERN STATES AND PROVINCES

BRITISH COLUMBIA -

Dr. L. H. Pennington, of the Office of Forest Pathology, has made the following brief statement of Blister Rust conditions up to July 31:

"Up to the present the rust has been found upon Pinus monticola in many places from Agassiz, some fifty or sixty miles east of Vancouver, to points beyond Thurston Bay, some 140 to 150 miles northwest of Vancouver. It has been found inland north of Vancouver 75 miles north of Squamish along the Pacific Great Eastern Railway. This is about 110 miles north of Vancouver and practically at the place where the railway passes the summit of the Cascade Mountains. This place is in the Pinus albicaulis belt and infection was found upon Pinus Monticola within a few miles of an abundance of Pinus albicaulis. No infection was found upon the P. albicaulis examined. If this species is not already infected in some places, it will probably become infected in the near future.

"At North Vancouver and at Thurston Bay, infections have been found which seem to date back to 1911 or 1912; thirty miles up the P. G. E. Railway one was found which seemed to date back to 1913. Either the rust was introduced into several localities at about t e same time, some ten or twelve years ago, or it was introduced into one locality several years prior to that time and had become rather widely spread by 1912. The greatest number of infections seem to be of 1916. In some places, however, there are many of 1917. In some places, as at Daisy Lake, Bold Point, and Thurston Bay, there are many more recent infections in the immedicate vicinity of native Ribes. In most cases serious infections are within 100 yeards (rarely 200 yards) of Ribes. There are a few instances where scatttered infections are found up to a mile from the block of Ribes responsible for them. In the vicinity of Vancouver and in most places east of Vancouver, infection seems to have come largely from Ribes nigrum. North and west, however, there seems to have been more infection from native Ribes.

"The following species of native Ribes have been found infected: R. laxiflorum, R. sanguineum, G. divaricata, R. lacustre, and G. lobbii.

"These species are arranged in the order of their apparent susceptibility. Further experience, however, may make it necessary to change the order. R. bracteosum, sanguineum, and G. divaricata have been found one quarter of a mile from infected pine; R. lacustre and G. lobbii have been found one half of a mile from infected pine. Leaves of all except G. lobbii have been as heavily infected as any of R. nigrum in the vicinity of infected pines. Weather conditions have not favored uredinial spread."

Mr. Posey, under date of August 31st, notes additional infections found during August:

"On August 28 infection was found on black currants by the Canadian scouts at Revelstoke and Beaton, British Columbia, approximately 250 miles northeast of Vancouver. Revelstoke and Beaton are situated about 135 miles and 110 miles respectively north of the international boundary, in a valley the drainage of which is southward through the Columbia River. They lie within the belt of the western white pine in eastern British Columbia, and are directly connected with the white pine stands of the Inland Empire. Should these infections prove to be so extensive as to be beyond hope of eradication, the white pines of the Inland Empire would be directly threatened by the disease."

WASHINGTON -

Mr. Putnam has given the distribution of the blister rust in the state up to July 31. In the Fall of 1921, infection was found on cultivated black currants at Sumas, Mt. Vernon, Beverley Park and Port Townsend, and on Pinus strobus at Mt. Vernon; the latter infection dating from 1917.

NORTHWESTERN WASHINGTON

In 1922, blister rust had been found on black currants at Birch Bay and Deming in Whatcom County; at Edison and Clearlake in Skagit County, and on Pinus monticola at Blaine in Whatcom County; the infection on the latter being of 1917 origin.

Since August 1, Mr. Posey reports 38 additional blister rust infections have been found on black currants, as follows:

"Whatcom County: Birch Bay, Licking, Laurel, Bellingham (4 locations) East Bellingham, South Bellingham, Brennan, Marietta (3 locations), Ferndale, Geneva, Blaine (2 locations), Goshen.

"Skagit County: Edison, La Conner, Sedro Woolley.
"Island County: Oak Harbor (6 locations), Green Lake.
"San Juan County: Friday Harbor, Squaw Bay, Olga (2 locations), Doe Bay (2 locations), East Sound, Port Stanley, Richardson.
"Snohomish County: Arlington.

SOUTHWESTERN WASHINGTON

"Previous to August 1 no infections of blister rust had been found south of Port Townsend and Port Angeles, at the extreme northern end of the Olympic Peninsula. Since this date, 9 infections on black currants have been found along the coast of Pacific County, between Ilwaco and Bay Center, as follows:

"Ilwaco,	Pacific	County,	5	locations
Oysterville,	"	"	2	"
Bay Center,	"	"	2	"

"Scouting in this region since the location of these infections has not revealed the presence of any native white pines or the presence of the disease on any planted white pines. This fact, coupled with the severity of the infection on black currants, points strongly to the assumption that the disease may have overwintered on the black currants. Both native and planted Ribes are being carefully inspected in this region and also along the northwestern coast of Oregon, across the Columbia Rive from Ilwaco."

MISCELLANEOUS

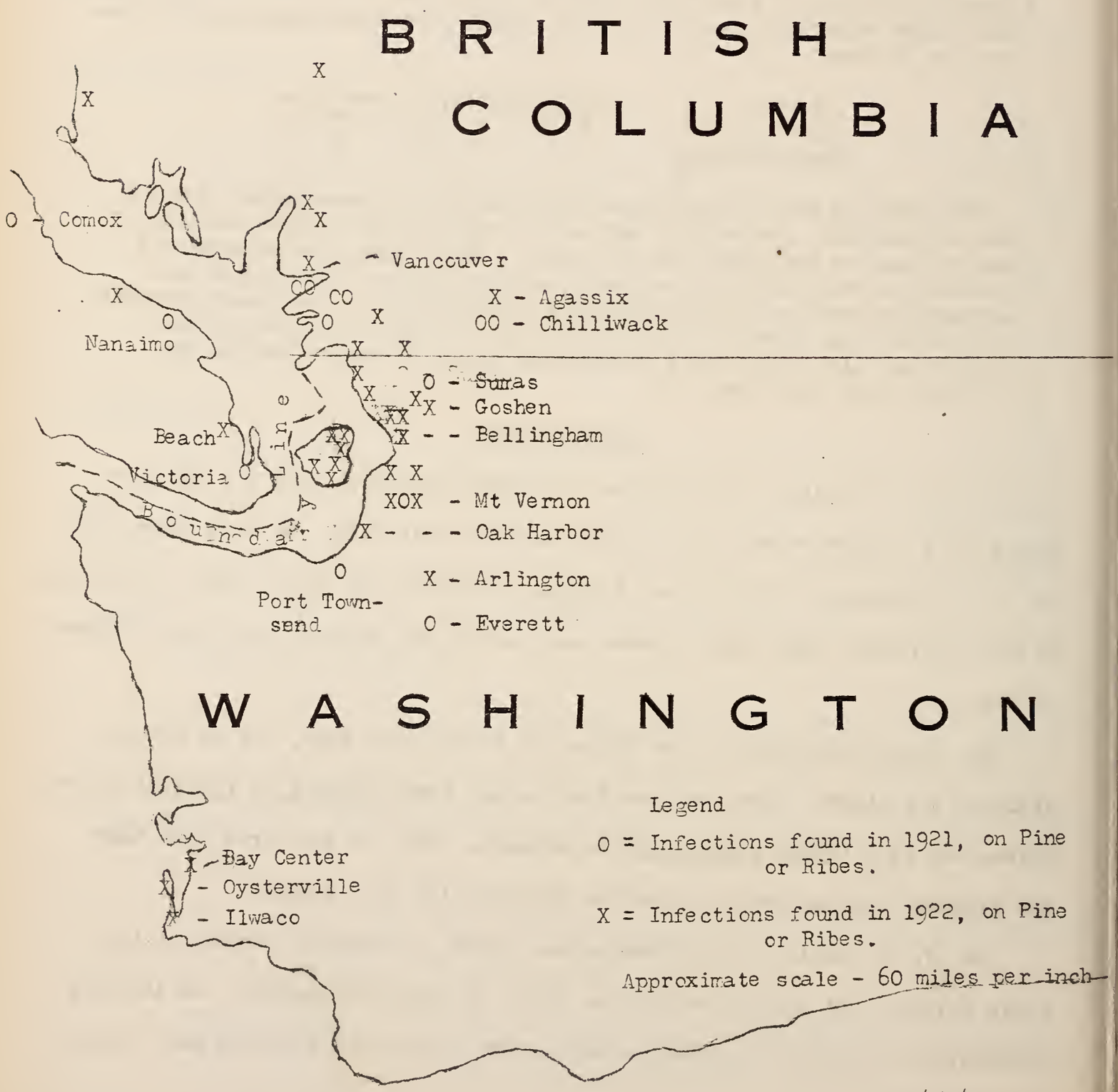
Mr. F. W. Perkins, of the Office of Motion Pictures, left for the West August 10 to secure views for a Western Blister Rust film. He will work with Dr. E. P. Meinecke of the Office of Forest Pathology and secure part of the film in the California sugar pine forests and part in the western white pine forests of Idaho.

Dr. Perley Spaulding of the Office of Forest Pathology, now in Europe studying the blister rust, reports that he has found *Cronartium ribicola* on the White-bark Pine (*Pinus albicaulis*) in England. This is the first time that the blister rust has been reported on this species from Europe.

Dr. J. F. Martin, of the Washington Office, attended a meeting of the state blister rust leaders at Boston, Mass. on August 25 and 26. An informal discussion took place regarding blister rust educational work and the problems

Distribution of the White Pine Blister Rust

in British Columbia and Washington



R. G. Pierce del.

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connected with control work in the Northeastern States. Methods for improving and coordinating the work in these states were discussed. Dr. Martin emphasized the need of close supervision by state blister rust leaders, the importance of checking Ribes eradication work and the necessity of keeping comprehensive records of essential data on blister rust work.

The Editor understands that the Confidential News Letter seems "cut and dried" to some of the field men. In this connection, he desires to state that "news" comes from the field. It is our desire to make the "News Letter" a real help to the field men, and to use it as a Clearing House for new ideas which spring up. The experience of one state leader in solving blister rust problems should be made available for the benefit of other state leaders. You may say you have nothing to offer for the News Letter. In this connection Dr. Martin's suggestion, that you use a note-book and jot down the News Items as you run across them, would be a great help in supplying news for this letter and in preparing interesting news for your own press service.

QUARANTINE REGULATIONS.

The following states have modified their quarantines because of the discovery of the blister rust in the State of Washington.

California prohibits the shipment of five-leafed pine trees, and all species and varieties of currant and gooseberry plants and cuttings from "all parts of that territory lying west of and including the counties of Whatcom, Skagit, Snohomish, King, Pierce, Lewis, and Skamania."

Colorado prohibits the importation of all five-leafed pines or currant and gooseberry plants "from the State of Washington."

Idaho quarantine five-leafed pines, currant and gooseberry plants, prohibiting their entry from British Columbia and from "that part of the State of Washington lying west of the crest of the Cascade Mountains."

Montana prohibits the shipment of five-leafed pines, currant and gooseberry plants from the State of Washington lying west of the Cascade Range.

Washington. State Quarantine No.7 prohibits the movement in Washington of all five-leafed pines, currant and gooseberry plants "within or from that part of the State of Washington lying west of the crest of the Cascade Mountains thro or into the rest of the State of Washington," and orders the destruction of the English black currant (Ribes nigrum) found growing in the counties of Whatcom, San Juan, Skagit, Island, Snohomish, King, Kitsap, Mason, Jefferson and Clallam.

This quarantine was amended August 18 to take effect September 1,1922, to permit the shipment, when completely defoliated, of all currants (except cultivated black currants - Ribes nigrum) and gooseberries from licensed and inspected nurseries to points within the State of Washington.

CONFIDENTIAL NEWS LETTER

Issued by

The Office of Blister Rust Control

Vol. 7

1923

BUREAU OF PLANT INDUSTRY

U.S. Department of Agriculture.

UNITED STATES DEPARTMENT OF AGRICULTURE

Bureau of Plant Industry

Washington

Blister-Rust Control January 20, 1923.

Confidential News Letter No. 1 - not for publication.

EASTERN STATES.

MAINE.

The twelve agents working during the past season, about half of whom were temporary men, obtained excellent results Mr. Frost reports, and judging from the amount of promised cooperation, both town and private, a large increase in the application of control measures in 1923 is certain. One agent for example already has cooperation promised equivalent to about $1200. This year eight towns appropriated amounts ranging from $100 to $250 each in order to ascertain Blister Rust conditions in their respective communities. It is expected that further funds will be voted for control work in these towns next season. All agents have reported pine infections throughout their areas, and make a practice of showing infection to pine owners; usually on their own pine.

To test the efficiency of work done by individual owners, it was decided to check at least 15% of the acreage worked by the seventy cooperators who destroyed the bushes on their own land in North Berwick. In this town, a total of 646 acres worked by the owners were reworked to check efficiency. Every seventh cooperator on the list was selected and his work checked. The crew doing the checking consisted of Endersbee, Frost and five blister rust Agents. The following table shows that pine owners can do good work, as they obtained an average efficiency of 92.5%.

Maine

Data Obtained in Checking Ribes Eradication Performed By Pine Owners in North Berwick, Maine.

Cooperator's Name	No. of Acres	Man Hrs. Orig.	Man Hrs. Ck.	Ribes Orig.	Ribes Ck.	%Efficiency	Method Original Working	No. Times Covered by Owner	Date Ck'd in Oct.	Blk. No.
Jacob Thompson	50	15	23	460	54	90	1 man owner	once	23	4
J. Gerrish Goodwin	30	4½	11¾	83	8	92	1 man hired	"	24	5
Elizabeth Hobbs	60	16	14	1178	36	97	2 men hired	"	24	5
L. W. Sherbourne	200	42	68	1950	190	91	4 men	"	25	6
Fred D. Hussey	30	16	7	300	108	73½	2 men	"	27	10
Stephen Ford	100	14	3½	11	5	76	3 men	"	27	24
Roscoe P. Allen	1	2	½	19	4	83	1 man	"	27	34
Haven E. Lord	100	44	27½	160	80	67	1 man	"	26	2
J. G. Nason	15	24	3½	100	13	88	1 man	"	27	22
Caroline Goodwin	60	61	15	1524	80	95	5 men	"	26	4
Totals	646	238	173¾	5785	578	92½	% Efficiency shown by re-checking.			

Blister Rust on pine dating back ten years has been found in the town of Lowell, some thirty miles north of Old Town. It is planned to do scouting this fall and winter in counties and towns where Blister Rust has never been reported.

Four permanent Blister rust Agents have been appointed for work in Maine and assigned as follows: (1) M. E. Watson, York County, headquarters Sanford. (2) S. D. Conner, Cumberland County, headquarters in Portland. (3) D. S. Curtis, Oxford County, temporary headquarters No. Bridgton, permanent headquarters at So. Paris. (4) G. H. Kimball, Androscoggin and Sagadahoc Counties, headquarters at Lewiston. When counties contain relatively small amounts of native pine growth one man is assigned to two counties.

NEW HAMPSHIRE

The land in and around the Cathedral pines in Conway, N. H. has been reworked. This tract is included in an area worked in 1917 and in which Dr. York has not been able to find any new infections.

During September there were 21 crews at work destroying wild ribes. There was so much individual cooperation this year that it was necessary to increase the force considerably. Over $10,000 had been contributed by pine owners up to September 15, and about $16,000 was appropriated by towns for this work.

L. E. Newman writes: "It may be interesting to learn that we have made a practice this year of not only hiring one local man for our blister rust crews but we have also made every effort, and in most cases have succeeded, to get some of the members of the Board of Selectmen to spend a few hours in the field with the crew. The results of this plan of work have, I believe, gone a long way towards placing blister rust on a firmer basis in many towns and has been instrumental in bringing out the fact that blister rust work is carried on efficiently and also that it is no easy job. One Selectman remarked, after spending two hours one afternoon with the crew, that he would not take a job with a blister rust unit for a hundred dollars a week. We received a letter from one of the Selectmen in Andover just a few days ago in which he complimented our organization very highly and went on to state that he considered the town very fortunate in having such a splendid foreman as we furnished."

An interesting record of the results obtained from blister rust exhibits at three fairs in New Hampshire is included in a report by Thos. J. King.

"In accordance with the custom which has prevailed during the past several years, exhibits of white pine blister rust were placed at the Bradford, Loudon and Hopkinton Fairs. The exhibit consisted of white pine trees

of various ages, some dead and others dying from blister rust; various species of the wild bushes and a disply of pictures showing damage and control methods."

"The Bradford fair was held August 28, 29 and 30 with Mr. F. W. Prescott in charge of the exhibit. Of the large number of persons talked with he recorded interviews with 50 persons, representing 20 towns in Merrimack and other Counties. All were interested; many promised active support."

"The Loudon fair was held this year on September 20 and 21 with Mr. Thos. J. Leary in charge of the exhibit. The exhibit was displayed only one day, but during this day some 500 persons were informed about blister rust. He made a record of his interviews with 12 of these people, of whom nine requested that their pines be examined for infection."

"The Hopkinton fair was attended by 30,000 persons and the manager considered 20,000 a conservative estimate of the number who saw the Blister Rust exhibit. Interviews with 66 persons representing 35 towns were recorded, many of whom asked to have their pines examined."

Criticism of the crew work done in Charlestown in 1920 was published by the Claremont Eagle last year. This season Mr. Corliss and Talbot, the foreman in charge of the work in 1920, interviewed every person who was reported to have criticised the work. They found in each case that the Ribes said to have been left by the crew were located outside the blister rust control area and in most instances several miles distant. Most of the people who actually knew about the local control work had nothing but praise for it. When this evidence was submitted to Mr. Putnam, the editor of the Claremont Eagle, he was convinced that an injustice had been done and promised to correct the unfavorable impression previously given the work.

Mr. Thomas L. Kane writes a short account of some meetings he has conducted in connection with his work in Grafton County, N. H.

New Hampshire

"Community meeting in Bath, N. H., Monday, October 30th. Had an attendance of sixty people. Quite a few pine owners brought specimens of blister rust to the hall for examination.

"On Wednesday, November 1st, held a field demonstration on the Kay lot in North Lisbon. Got seven cars and rounded up pine owners from Bath, Piermont and Landaff, and piloted party to infected area. Demonstrated control measures and explained seriousness of disease. Had thirty-six in party. One man attended who will go to Concord as State representative. He had been unresponsive up to the time of this trip and I couldn't even get him out on his own pine lot. This demonstration completely converted him. A newspaper man from Woodsville and Mr. Wilson, County Agricultural Agent, were also with the party."

Mr. Newman tentatively summarizes local cooperation received from pine owners during the past season as follows:

Blister Rust Agents	No. Cooperators	Total Am't Contributed	Approx. Acreage	Counties
W. J. Cullen	33	$1,200.00	3,500	Hillsboro & Strafford
T. J. King	34	3,774.50	9,771	Strafford & Merrimack
Locke Bullock	18	845.19	2,850	Hillsboro
F. J. Baker	15	1,405.00	4,031	Cheshire
D. B. Keane	19	341.75	3,402	Sullivan
K. E. Barraclough	18	221.00	1,090	Rockingham
J. J. Fitzpatrick	3	52.50	94	Belknap
Total for Blister Rust Agents	140	$7,787.44	24,664	
J. M. Corliss	14	2,020.77	4,770	Cheshire & Merrimack
L. E. Newman	2	376.98	2,300	Merrimack
Grand Total Estimate	156	10,246.69	31,808	

Note: - Records of all cooperation secured not received at date of compiling the above figures.

New Hampshire

Blister rust Agents attended the Farm Bureau planning meetings this past fall. The purpose of these meetings is to learn what subjects interest the different communities, to arrange a programme including them, and to follow it out during the coming year. The blister rust Agent endeavors to persuade each community to adopt an additional project - one which has as yet received little or no consideration from the average farmer and one which they all admit is important, namely Forestry. Six of these meetings have already voted for the forestry project in which blister rust is given primary importance. A leader is appointed in each community with whom the blister rust Agent can keep in touch. He is one who will gauge opinion as to what phase of forestry his particular community is interested, and at the proper time, will, through his county agricultural agent, arrange a field meeting at which time this subject will be demonstrated. At the same time white pine blister rust control will be given its share of attention. This will not only help the blister rust work, but will give the farmers and pine owners an opportunity to get information as to the proper care of their woodlots. It is hoped to secure a local leader in each town who can represent the blister rust work. He will be given all information relative to blister rust conditions in his town and what has been done on control work.

The largest blister rust field demonstration of the year was held at the South Deerfield infection area in September. The following article clipped from the "Rockingham County Farmer" of October 4, tells the story of this meeting. There were presnet a number of selectmen from neighboring towns, and a number of representatives of the lumber industry.

New Hampshire

FULLY 100 PEOPLE AT THE BLISTER RUST DEMONSTRATION
(From Rockingham County Farmers)

On Thursday afternoon, September 21, probably the largest demonstration ever held in Rockingham County was held in South Deerfield. The demonstration involved an excellent practical illustration of what Blister Rust will do to white pine if not checked, coupled with a talk on forest reproduction by J. H. Foster, State Forester. The Deerfield area involving some 106 acres, represents one of the worse infected areas in the state and it was pleasing to note that in the 100 people many came from various parts of the state. The demonstration was arranged in cooperation with Mr. K. E. Barraclough, White Pine Blister Rust Agent for Rockingham County, and the State Forestry Department.

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VERMONT

Mr. Riley reports that Perry H. Merrill, agent in charge of the Rutland district, resigned the 20th of November to take up general forestry work with the Vermont State Forestry Department. Mr. Merrill has made excellent progress in his district for the short time he has been there and has obtained considerable cooperation for next summer. We are sorry to lose his services.

George E. Stevens has been appointed as agent, with headquarters in Rutland. Mr. Stevens is a graduate of the New York Ranger School at Wanakena and has had two years experience in Blister Rust Work.

A particularly bad infection area was discovered by Mr. Bradder in a nine hundred acre tract in the town of Barnet. No study has been made of this area, but it is apparent that infection runs between fifty and eighty per cent, with numerous trunk cankers up to thirty-five feet high. One specimen was taken of a canker on wood 9"-10" in diameter, but the majority of stem cankers are on wood 6" to 7" diameter and under.

Vermont

A surprising amount of infection is apparent on young pine in Vermont, particularly along the lower Connecticut River. Infection can easily be found in any pine section of the state.

Approximately one hundred pine owners have cooperated with the state in crew eradication work this past summer. A number of others have done their own Ribes eradication, with moderate success. Many who promised to destroy their wild Ribes have failed to do so. On the whole, private eradication without immediate state supervision has not proved successful in Vermont this year. Approximately 42,621 currant and gooseberry bushes were destroyed on about 6000 acres.

A conference was held in Rutland, October 20th between Messrs. Detwiler, Filler, Hastings, Fivaz and Riley.

A closer cooperation with the County Agricultural Agents is planned for this winter. Blister rust is to be made a project on the Farm Bureau programs, and it is expected that community project leaders in the various counties will be appointed to work with the Federal Blister Rust Agents. Farmers meetings under the auspices of the County Farm Bureau are planned, at which Blister Rust Field demonstrations will be given.

Frank H. Rose sends us this newspaper clipping which appeared in the September 14 issue of the Landmark, White River Jct., Vermont, "A white pine blister rust exhibit was displayed at the Vermont Fair, White River Jct., during the week of Sept. 11th. Specimens of diseased trees, and Ribes leaves showing the various stages of the disease were displayed. Photographs showing pine infections, crews at work and the different species of Ribes found in Vermont were also displayed. Mr. J. E. Riley, Jr., of Montpelier, and Mr. F. H. Rose of White River Jct., were in charge."

Vermont

A White Pine Blister Rust meeting was held at the State Fair Grounds, White River Jct., Wed. Sept. 13th. Mr. W. G. Hastings, State Forester, Mr. J. E. Riley, Jr., Montpelier, Vt., Mr. W. E. Bradder, Wells River, Mr. S. V. Holden, Brattleboro, Mr. P. H. Merrill, Rutland, and Mr. F. H. Rose, White River Jct. attended. Mr. Hastings and Mr. Riley addressed the meeting, the work of the present season was discussed and plans for the winter season were made. It is planned to hold a conference of the Vermont blister rust Agents sometime before the holidays, and probably every three months thereafter.

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RHODE ISLAND

The following notes come from R. A. Sheals:

Mr. Olaf Anderson, our blister rust educational agent, has been scouting for the disease on pines and ribes in the northern towns of the state. In addition to this work he distributed blister rust folders and bulletins, and interviewed all pine owners.

Mr. Anderson was surprised to find that one half of the wooded area of Rhode Island has a good growth of pine reproduction, and in his estimation, if protected from blister rust and forest fires, the future merchantable crop of white pine will be about four times that of the present stand of approximately 65,000,000 board feet.

A blister rust exhibit was set up in the town hall of Burrillville in the village of Harrisville and Mr. Anderson was in attendance to explain the work to any who are interested.

No new infection areas have been found to date. There are at present 10 spot infection areas in Rhode Island. Ribes have been eradicated for a distance of at least 300 yards from these areas.

Rhode Island

Rhode Island is requesting an increase in the Annual State blister rust appropriation from $2,500.00 to $3,500.00 for 1923.

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MASSACHUSETTS

News from Massachusetts comes in a batch of interesting notes from C. C. Perry:

Active Ribes eradication work was discontinued on September 30 except in one or two instances where State foremen were retained until October 15 to round out eradication areas and to perform a limited amount of post season Ribes scouting.

The results of the season's work indicate conclusively that this has been a banner year. Field work this season was unavoidably delayed until July, but in spite of this fact, the unprecendented prevalence of rainy weather, the scarcity of trained foremen, and other minor handicaps, the work accomplished far exceeds any previous blister rust control work conducted in Massachusetts. It is difficult, however, to properly summarize the season's work in comparative form, because field conditions and consequently methods of work have been so different in the several districts in the State.

Field control work has been in progress only in four counties, since the appointment of the last four blister rust educational Agents were made so late that time did not permit of any extensive control work this year.

To summarize briefly the work in these four counties and without any attempt at comparisons, the following figures are of interest:

Massachusetts

District I Essex County - Towns of Boxford, Topsfield, Ipswich, and Hamilton, Wm. T. Roop, Agent. Control method used - two-man scouting system.

No. Pine owners cooperating	- 236
Work completed on 183 properties	
With a total area	- 19,806 acres
Amount expended by owners	- $781.09
Total number of Ribes destroyed	- 38,267
Average cost per acre	- 8¢

District III Plymouth County - Towns of Lakeville, Middleboro, and Rochester, E.M.Brockway, Agent. Control method used - one man scouting system.

No. Pine owners cooperating	- 301
No. acres examined	- 16,680
No. Ribes removed	- 1593
Cost per acre	- 4¢

Wild Ribes in this district have been found only very scatteringly and, therefore, the work has resolved itself into intensive scouting. Pine in the county is particularly abundant, however, and therefore, intensive work of this sort has been essential.

District IV Bristol County - Towns of Westport, Dartmouth, Fairhaven, New Bedford, Freetown, and Fall River, Chas. J. Lihme, Agent.

The pine in this county has been found in limited areas so that a considerable territory has been covered during the season. The work has consisted in the scouting of the pine areas in the towns listed, and the dissemination of blister rust information to land owners. On account of the scarcity of Ribes, no extensive eradication work on the part of the owners has been necessary, the state scout pulling up the scattered bushes found.

District VI Worcester (North) County - Towns of Winchendon, Royalston, Ashburnham, Princeton, Mr. Merrick, Agent.

Wild Ribes in this part of the state are so abundant that it is necessary to use the intensive crew formation field methods with resultant higher costs.

Massachusetts

No. Pine owners cooperating	- 5
No. acres examined	- 6887 acres
Amounts expended by owners	- $2184.10
Total No. Ribes removed	- 1,514,253
Cost per acre	- 91¢

It has not been possible to assist all the pine owners who are willing and anxious to carry out all necessary control measures. For example, in Essex County, the owners of 7033 acres have already asked for assistance, while in Worcester County the owners of more than 25,000 acres of pine lands have asked for inspections and advice. Requests for assistance have also been received from several municipal water departments including the Metropolitan System at Clinton.

Since the last issue of the news letter, W. D. Black has been assigned to work as blister rust Agent in southern Worcester County, and R. E. Wheeler to the northern part of Middlesex County.

Agent W. N. Hill made a start in Ribes eradication work in Hampden County by covering 100 acre tract of pine land owned by the Springfield Water Works, located in the town of Blandford. Mr. Hill is now engaged in educational work in some of the towns in the "hill" section of his county, and has completed a pine survey in the town of Blandford.

P. C. Morse, in charge of work in Franklin County, has started a systematic canvass of pine owners in the town of Orange. During September he reported wild Ribes as very scattering.

No intensive scouting for the disease has been attempted during the field season, but as a result of inspections incidental to the regular field work, the disease on pine has been located in eleven towns in which it has not previously been reported.

Massachusetts

This past fall, a special effort has been made to display a complete exhibit of blister rust specimens at the more important agricultural and community fairs, and a very live interest has been shown by land owners in each instance. The number of fairs attended in each district is as follows:

District I Essex	- 4	District VII Franklin	- 5
District III Plymouth	- 7	District VIII Hampden	- 5
District V and VI Worcester	-17	District IX Berkshire	- 2

During the week of November 6, the Massachusetts blister rust Agents had their first "get-together" and examined the heavily infected regions in northeastern New York.

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CONNECTICUT

H. W. Hicock sends an envelope full of news:

Control:

Field work on Ribes eradication was completed in Cornwall on September 16th for the season and in Salisbury on September 2nd. In the former town between five and six thousand acres were covered and 100,000 Ribes bushes destroyed. In Salisbury the area covered was approximately 2,000 acres and the number of bushes destroyed, 37,000. Funds subscribed by local cooperators for Ribes eradication work were spent under the direction of the Connecticut Agricultural Experiment Station as follows:

In Cornwall	$1727.86	Community cooperation
In Salisbury	502.79	
In North Canaan	30.00	Cooperation with an association.

Educational Work:

A meeting was arranged in Salisbury on August 21st by Mr. H. F. Round, blister rust Agent for Litchfield County, to discuss the blister rust situ-

Connecticut

ation in that town. A plan of work was outlined by Mr. Filley, Station Forester, as follows:

Area in need of working	9,000 acres
Approximate cost	$7,000

It was suggested that the work extend over a period of two years beginning in 1923 and that steps be taken to raise $1750 each year from local sources, the remainder of the $7,000 to be spent from the State appropriation. Mr. Filley's plan was adopted and it was voted to raise the money.

In the town of North Canaan at the annual town meeting on October 2nd it was voted that---"The town appropriate $500 for the eradication of the pine blister rust in the town of North Canaan provided the state will spend an equal amount." Advantage will be taken of this in 1923. This is evidence of the good results obtained by Mr. Round in his educational work.

Mr. R. M. Hicks, Agent for Tolland, Hartford, and Windham Counties, has discovered infection on pine at numerous places not hitherto reported. Wild Ribes are apparently scarce in his territory. The results of his work indicate that blister rust on pine is widely scattered throughout his territory and while not serious at present it needs careful watching to prevent outbreaks. Mr. Hicks is not making any attempt to get community cooperation such as is done in Litchfield County. His work will be confined to the instruction of individuals in the identification and control of the rust.

Mr. A. D. McDonnell was appointed Agent on October 2nd. He has been assigned to Fairfax, New Haven, New London and Middlesex Counties with headquarters at the Experiment Station at New Haven.

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NEW YORK

H. F. Amadon reports;

Ribes eradication work was suspended on State land September 25th and on the land of local cooperators October 8th. Field conditions in the counties south of Albany enabled eradication work to be continued until October 8th.

The blister rust educational Agents have settled down to their work and are now functioning effectively. Considerable cooperation has been secured for next spring.

Early in November a strip line was started in Warren County. This line running from Warrensourg to South Horicon, which might be called the Schroon Valley line, was a rod wide and extended for a distance of 10 1/8 miles; 18.67% of all the trees were infected. On a second strip line begun in December running from Pottersville to Igerna, also in Warren County, N.Y., 2 miles had been finished. The per cent of infected trees ran to 23.98. An average of the two strip lines gave 19.98% of all trees infected.

H. F. Bullard, who was appointed educational Agent in Saratoga County, has been transferred to state work and is at present running surveys on all land eradicated in the season of 1922. Later, he will be engaged in obtaining data on white pine values.

Early in October Professor Collingwood, of the Department of Forestry, Cornell University, started out with a motion picture outfit for a tour of the white pine districts. He gave short forestry addresses stressing the subject of white pine blister rust. A substantial program of films were shown, 2 Federal and 3 State Conservation Commission films being used. Shows were put on in isolated hamlets where there were no picture houses and where some of the people had never seen motion pictures before. The

New York

attendance was good for the size of the towns, and a great number of pine owners have been reached in this way. Due to increasing duties at Ithaca, Professor Collingwood was obliged to leave the work October 28th and since then Agent Fred F. Franklin has taken up the work. The schedule for this type of work goes thru to December 1.

B. H. Nichols, who has had charge of and been identified with the blister rust work in Essex County for several years, has been appointed Agent in Essex County.

Mr. L. W. Hodgkins made a trip into Lewis County in November to study conditions there. Large areas of sandy lands were found which were practically Ribes free. They are too poor for agricultural purposes, but would be good for white pine. Already a number of pine plantations have been set out, and the state is putting on an intensive reforestation campaign, which will result in more of these sandy lands being planted.

Skunk currant was found in about 50% of the swampy areas; while prickly-berried gooseberry was found fairly dense in some pastures and wet stony lands, running as high as 92 bushes per acre.

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MICHIGAN

Reports from Michigan come from D. V. Baxter, who writes:

"A third pine infection centre which was found in Michigan this season was near Grand Rapids. The tree was killed by blister rust and had been dead for a long time. It was received from Ussy, France, some years ago with a shipment of about 2000 trees. Dr. Colley verified the identification. The diseased tree was found near Ada, about seven miles

Michigan

east of Grand Rapids. I worked for several days along the Wisconsin line inspecting black currant bushes in the towns and scouted the rest of the time. I found black currants more extensively planted in Sault Sainte Marie than in any other city of its size visited this season. A fourth pine infection was found in Royal Oak, Michigan."

.....

WISCONSIN

A Blister Rust exhibit was placed by Mr. Ninman and Mr. Thompson at the Northern State Fair at Chippewa Falls, Wis., held Sept. 12 - 15. A display was also maintained at the Dunn County Fair at Menomonie, Wis., Sept. 20 - 22.

The season's work in Wisconsin was brought to a close the first of October, when Mr. Ninman and Mr. Thompson left for quarantine inspection work.

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MINNESOTA

Prof. Ruggles reports that blister rust has not been found in any Minnesota nursery this year. Blister Rust exhibits were held at six county fairs and at the state fair. Ribes infection still occurs in the Goose Lake area (south of Rush Lake), but a search by Mr. Streator and Mr. Braden failed to reveal any pine infection. Ribes infection was first found there in 1918.

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Conference

The Eighth Annual Blister Rust Control Conference will be held at Boston, Mass., February 8-9, 1923. Programs for this conference have been distributed.

WESTERN STATES

The Third Western Blister Rust Conference was held in Portland, Oregon, November 22, 1922, more than 100 delegates being present from areas infected or threatened with infection, including British Columbia.

A full report of this Conference is found in the Lumber World Review of December 10, 1922. Very close cooperation has been carried on this past year between the various Federal, State and private agencies interested in the preservation of the western pine forests from the blister rust.

Extensive scouting activities have revealed the following:

(1) The blister rust extends from British Columbia down the coast to the mouth of the Columbia River.

(2) It is widespread throughout the coast pine belt of British Columbia on both pines and Ribes.

(3) It occurs on both pines and Ribes at Revelstoke and Beaton east of the dry belt in British Columbia, but has not been found on any host plant nearer than a hundred miles north of the international boundary in this region.

(4) During the summer of 1922 it was found on Ribes in the following counties of western Washington. San Juan, Island, Whatcom, Skagit, King, Pierce, Clallam, Jefferson, Kitsap, Mason, Grays Harbor, and Pacific. The number of localities and number of plants per species is as follows:

Places	Species	No. Plants
1	G. divaricata	1
44	R. bracteosum	94
6	Cultivated red currant	15
106	R. nigrum	709

Western States

(5) The disease thus far has been found on pines in Washington only at Blaine and Mt. Vernon.

(6) An importation of about one thousand white pine seedlings from France to Vancouver, B. C. in 1910 is thought to be the original source of blister rust infection. This importation was of course made some years before the establishment of the blister rust quarantines in Canada and the United States.

Experiments in Ribes Eradication:

Experiments in local control of the disease have been under way the past season in the vicinity of Alder Creek, Boville and Elk River, Idaho, where Ribes have been removed, and accurate data kept on time and cost.

On the particular 6,400 acre tract near Elk River, Idaho, 936 acres would be worked by a crew of an average cost of $6.50 per acre, and 5464 acres would be cleared of currants by the advance scout at a cost of 15 cents per acre. That is, on this ten square miles of land that is presumably average for the Idaho pine region, only 14.6 per cent of the tract would have to be worked by crews, and the cost is therefore reduced to approximately one dollar per acre.

This season's experiments were necessarily on a small scale and incomplete. However, sufficient data are now available to judge the feasibility of such work in the western white pine regions with some degree of accuracy. In general, this year's work shows that the cost of blister rust protection on large tracts of western white pine in Idaho will approximate an annual charge of 3 cents to 12 cents per M feet of merchantable white pine in mature stands. The annual charge in young growth will vary from 3 cents to one dollar per acre and probably will average less than 25 cents per acre per year. This statement is based on an estimated cost of crew

work along streams at $10 per acre and $4.50 per acre for crew work on upland types. The cost of scouting should not exceed 8 cents to 20 cents per acre. The proportion of land that can be worked by scouting will determine average cost. It is assumed that the land will have to be gone over regularly at five-year intervals, and it is also assumed that fewer currants will be found and the work will cost less after the first time over an area. This assumption is based on experience in the East.

Damage to Western White Pine:

To secure exact figures on the actual damage that can result to western white pine, two plots were laid off at Daisy Lake, B. C. in the region of severe infection north of Vancouver.

Plot 1 covered one-third of an acre and contained 176 trees varying from 5 to 50 feet high and up to 9.0 inches D.B.H., with the majority ranging from 15 to 20 feet high and 1 to 5 inches D.B.H. of these trees, all of which were heavily infected, 40 per cent were dead from the effects of blister rust. With a few exceptions, they had died this spring. It was estimated that all but 4 per cent of the entire stand will be killed in 5 years. The trees have not died because of stem girdling but because of the innumerable cankers which killed the individual limbs and twigs. Death in this way results much more rapidly than it does if the main stem is girdled. An idea of the severity of the infection is given by the fact that a tree 12 feet high, 2.5 inches D.B.H. and with 53 branches had 353 infections or an average of almost 7 per branch.

Plot 2 covered two-thirds of an acre and contained 425 trees ranging from saplings a few feet high up to a few trees from 13 to 20 inches D.B.H. and over 90 feet high. Seventy-nine per cent of the trees were found infected, 10 per cent more were probably infected though the cankers could not

be seen from the ground, and the 11 per cent free from infection comprised small, suppressed saplings of no value. Few of the infected trees were dead yet since the infection was not as heavy as on plot 1 due to fewer Ribes bushes on plot 2. Furthermore the trees averaged much larger than on plot 1, but all indications point to a heavy loss, even among the larger trees within the next ten years.

Distance of Spread and Rate of Spread of Each Kind of Spore:

There is no evidence to show that the distance of spread of spores from pine to Ribes, Ribes to Ribes, and Ribes to pine differs from that found in the eastern states.

Recommendations:

The protective measures recommended by the conference included (1) the prohibition of interstate movement of 5 leaved pines and Ribes in Washington, Oregon, California, Montana and Idaho; (2) the destruction of cultivated black currants in these states; (3) the continued scouting for and investigation of the disease by the Federal Government and (4) the maintenance of existing Federal and State quarantines.

The following members of the Bureau of Plant Industry attended the conference: Ellsworth Bethel, J. S. Boyce, S. B. Detwiler, H. G. Lachmund, E. P. Meinecke, Haven Metcalf, L. H. Pennington, G. B. Posey, C. R. Stillinger and Stephen N. Wyckoff.

Report of the Proceedings and Recommendations of the Third Western White Pine Blister Rust Conference held in Portland, Oregon, November 22-23, 1922 is now being mimeographed and is available for distribution. Copies of this may be obtained from Mr. G. B. Posey, 429 Lyon Building, Seattle, Wash.

BLISTER RUST APPROPRIATION

An appropriation of $155,000 was recommended by the Conference to provide for the above work in the West for a 15 month period, beginning April 1, 1923. The Secretary of Agriculture has submitted an estimate for western work but this is still under consideration by the Bureau of the Budget.

The Department and the Bureau of the Budget recommended $200,000 for blister rust work in the Eastern United States for the fiscal year 1924. The House passed the Agricultural bill carrying this amount. It was increased in the Senate to $250,000 and the conferees on the bill recommended that the House agree to the Senate's action.

DATA ON VIOLATIONS OF FEDERAL QUARANTINE NO. 26

FOR THE YEARS 1917-1922 INCLUSIVE.

	1917	1918	1919	1920	Spring 1921	Fall 1921	Spring 1922	Fall 1922
No. of Violations of record	3	26	18	107	229	16	118	6
% by nurserymen (by no. of violators)	33	93	100	72	49	31	40	17
% by nurserymen (by no. of shipments)	33	96	100	89	81	21	51	16
% by individuals	67	4	0	11	19	79	49	84

FALL QUARANTINE INSPECTION

Quarantine inspection in the Mississippi Valley has been carried on by Mr. Hodgkins at Kansas City, Mr. Thompson at Omaha, Mr. Ninman at Chicago, and Mr. Braden at St. Paul. Inspection began about October 6, and was brought to a close on November 18. Shipments were reported light during the early

Fall Quarantine Inspection

part of the season, apparently having been retarded by the prolonged warm and dry weather. Five violations of quarantine 26 have been intercepted by inspectors at the above points.

In the West inspectors have been stationed at Spokane, Pasco and Bellingham, Washington and at Portland and Pendleton, Oregon to examine shipments of nursery stock for violations of Quarantine 54. Up to December 8th, ten violations of Quarantine 54 and two violations of Washington State Quarantine 7 had been reported.

The following letter from Mr. Lee A. Strong, Chief of the California Bureau of Plant Quarantine, to the Federal Horticultural Board, will be of interest to Quarantine inspectors:

"Under date of November 2, Mr. A. C. Flaury, Supervising Quarantine Officer at the port of San Francisco, reports that during the inspection of a car containing cranberries shipped from North Harbor, Mass., to San Francisco, Mr. R. M. Peckham and Mr. S. G. Langford, Quarantine Inspectors of San Francisco, found among some timothy hay that was placed in the bottom of the car a small branch of 5-needle pine."

"While this instance was probably of no great importance in so far as introducing a specific pest is concerned, to me it does indicate the importance of proper cleaning of box cars that have hauled plant products before they are again permitted to engage in interstate commerce. It could hardly be expected that a violation of the white pine blister rust quarantine would be found in the bottom of a car containing cranberries."

.....

ABOUT BLISTER RUST WORKERS.

In the course of a busy season, T. J. King, county blister rust agent in New Hampshire, found time to annex a wife. The wedding took place in November. The bride was Miss Catherine Corliss, sister of John M. Corliss who is also engaged on Blister Rust work for the State of New Hampshire.

D. V. Baxter, who conducted this season's work in Michigan writes: "I am on a fellowship at the University of Michigan, Ann Arbor, this year, working in forest pathology on one of the finest problems ever."

Miss Rice of the Boston Office was married during the Christmas Holidays to Mr. Taper.

PROFITS IN WHITE PINE

An interesting account of white pine yield is included in a recent Quarterly Bulletin of the Michigan Agricultural College Experiment Station. The following figures are taken from the article by A. K. Chittenden on the Station's White Pine Plantation:

In 1896 a plantation of white pine was established at the Michigan Agricultural College. The plantation covers about 3½ acres located on sandy and gravelly soil. The trees were five years old at the time of planting and the plantation is now thirty years old from seed and twenty-five years have elapsed since the time of planting. The spacing distance was eight by twelve feet, requiring 453 trees per acre. No thinning has as yet been necessary but the lower branches have been pruned to a height of fifteen feet.

Measurements were taken on a sample acre five years ago and again this year. The results of these measurements are given in the following table:

Profits in White Pine

Date	Number of trees per acre	Diameter average tree, inches.	Height average tree, feet.	Volume per acre, long cords.	Volume per acre, board feet.
1916 ----------	399	7.17	34.4	17.7	9,975
1921 ----------	387	8.09	45.3	30.5	16,354

This gives an increase of 6,379 board feed during the last five years or 1,276 board feed per year as an average growth for that period. While the logs are small at present they are rapidly increasing in size and value. At their present size they are worth about $10 per thousand board feet or $163.54 per acre and this is increasing at the present time at the rate of $12.76 per year.

The cost of establishing such a plantation per acre would be about as follows:

453 four year old white pine at $20 per thousand.....	$ 9.06
Preparation of ground	10.00
Planting	10.00
Cultivation	5.00
	$34.06

The present value of $163.54 per acre of the timber represents 6.5 per cent compound interest for twenty-five years upon the original cost of $34.16. If the land value is placed at $40 an acre, and the taxes are not figured in as they vary considerably in different localities, the present value of $163.54 an acre represents 4.1 per cent compound interest for twenty-five years upon the cost and the land value.

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NOTES FROM THE OFFICE OF FOREST PATHOLOGY

Dr. Perley Spaulding of the Office of Forest Pathology has just returned from a study of the blister rust and other forest tree diseases in Europe. He finds the rust killing white pines of all ages up to 118 year old trees. He states that there is not the slightest doubt that the largest and oldest white pines can and will be killed by the rust.

This is an excerpt from a letter from Dr. Perley Spaulding, dated Zurich, Switzerland, August 23, 1922:

"Let me say as emphatically as possible that white pine blister rust is a serious factor for the lumberman. At Epinal finely grown Pinus strobus trees over 60 years old were being killed quite rapidly. These trees were very tall (85 feet for a guess) and 18-22 inches at least in diameter. I think some were over 24 inches. Again here at Rapperswil, Switzerland, just the other day, I saw trees said to be about 120 years old being killed, the peculiar part of it is that the large trees die about as quickly as those only 20-30 yrs. old - the disease seems to go quite rapidly when it gets into the trunk. These trees are stated to be over 100 feet high; they are very tall and have grown remarkably well. They are certainly 24 inches or over in diameter, yet there is here and there one dying. Figures on percentages are useless as they cut out the dying one every little while. Where heavy infection occurs, blister rust is a serious factor in the oldest trees I have been able to find here. Again, In Murthly, Scotland, trees of Pinus monticola (See Moir's reports for age and size) have been killed - and not only one or two, but the entire lot of 50 or more. Here too I saw Pinus strobus up to 75 years killed by it."

Notes from the Office of Forest Pathology

Dr. Spaulding gave a paper before the American Phytopathological Society at the Boston meeting on foreign studies of the white pine blister rust.

Dr. Spaulding studied a rather serious disease of Douglas fir in Scotland. The fungus, a species of Phomopsis, kills small reproduction and produces cankers on larger growth. We hope that this fungus is not present in this country but if in the course of their regular work anyone notes cankers on the twigs of the Douglas fir or on species of Larix or Tsuga, specimens will be appreciated.

Dr. Colley and Miss Taylor gave the following two papers at the Boston meetings:

1. Studies on the aecial stages of Cronartium ribicola and Cronartium occidentale.
2. The Peridermia on five-needled pines: Cronartium ribicola Fischer, Peridermium kurilense Diet., and Peridermium sp. ex. Pusa Herbarium.

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The following pithy statement by L. W. Hodgkins is this month's editorial. Mr. Hodgkins' efforts prove he practices what he preaches:

"I believe that I fully realize the situation, not only in Maine but throughout the white pine growing section, and that the men in Blister Rust Control work must exert their energies to the best advantage of all concerned.

If it's educational work, let us drive it home with sledgehammer blows; if it's pulling Ribes, let us pull with a human chain

that will reach across the continent; if it is experimental work let us dig to the fathomless depth to find a cure.

I am more convinced than ever that Blister Rust is a most vital blow at our timber crop, and is like a thief in the night-time, stealing the timber in the making from the coming generation."

.....

County Agricultural Agents use "Show Me" Methods.

"Actual Demonstrations to Teach Modern Methods: 'I wouldn't have believed it if I hadn't seen it with my own eyes,' said a farmer looking at some sprayed and unsprayed apple trees." (From The Wisconsin Agriculturist, September 2, 1922):

The attitude of the farmer is the attitude of most of the rest of us. We all like to see with our own eyes. We believe what we see and consider lightly that which others tell us.

PUBLICATIONS

Farmers' Bulletin 1024, Currants and Gooseberries, has been revised and is now available with a new blister rust write-up by Mr. Detwiler, including a summary brought up to date of April 10, 1922, of State and Federal quarantine regulations concerning the shipment of Ribes.

Potential Sporidia - Production per Unit in Cronartium Ribicola, by Minnie W. Taylor, Phytopathology, June, 1922, pp. 298-300. This study shows the high sporidia-producing power of the black currant. For a square inch of leaf surface it is approximately 3 times as great as that of Ribes aureum, which is next highest, 13 times as great as that of Ribes vulgare, and nearly 60 times greater than that of Ribes lacustre.

OCCURRENCE OF CRONARTIUM RIBICOLA IN EUROPE. - By Jean du Frenoy, Station de pathologie Vegetale, Paris., Phytopathology, Jan. 1922, pp. 302-4.

Viability of Telia of Cronartium Ribicola in Early Winter, Perley Spaulding, Phytopathology, May, 1922, pp. 221-4.

The "Manchester Union Leader" gave a full page in its Sunday Edition of October 1 to an article on blister rust written by T. J. King. Six illustrations accompanied the article.

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UNITED STATES DEPARTMENT OF AGRICULTURE

Bureau of Plant Industry

Washington

Blister Rust Control May 21, 1923.

The Blister Rust News, Vol. 7, No. 2

(Confidential, not for publication)

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Eastern States

MAINE

W. O. Frost, under date of March 6, writes that the 4 blister rust educational agents report 47 towns with Blister Rust Articles in their town warrants calling for appropriations ranging from 100 to 300 dollars each. Nine towns in York County appropriated $1,850.00, and 7 towns in Oxford County appropriated $1200 for blister rust control.

Later advices from Maine show that 36 towns have already appropriated $6,723 for cooperative blister rust control work and that the State has appropriated $5,000 for each of the two ensuing years. Mr. Kimball has secured 6000 acres of private cooperation for this season. Mr. Conner reports "pine infection in every town in Cumberland County and on some plots taken at random, infection runs as high as 50%."

The following indorsement from the Selectmen of the town of Standish speaks well for the effectiveness of the blister rust educational work now under way:

Maine, cont'd.

"To whom it may concern:

We the undersigned Selectment of Standish do hereby signify that we have witnessed the damage done by the White Pine Blister Rust and we sincerely hope that every town in Cumberland County will take active measures to stop the spread of this disease.

Signed,

Delmont R. Hawkes
Rufus C. Randall
Roy C. Boulter
Selectment of Standish."

Mr. A. J. Lambert has been assisting Messrs. Watson and Kimball on educational work among pine owners. At a Farm Bureau meeting addressed in Windham on February 20, it was unanimously voted to adopt Blister Rust Control as an Extension project.

Mr. Frost has been specially busy during the winter giving talks on blister rust at Grange and Farm Bureau meetings. He finds stereoptican talks with lantern slides have more punch than talks which are not illustrated.

A resume of the work in Maine for 1922 is given by Mr. Frost:

During the summer we had twelve Agents stationed in as many towns, who did scouting, educational, and supervisory work. These twelve men interviewed 1611 pine owners. 1101 owners promised to cooperate in the removal of Ribes. 464 pine owners actually eradicated the Ribes. 637 owners promised to eradicate Ribes before July 1, 1923. Pine owners eradicated 442,999 Ribes from 20,363 acres at a cost of $4,811.58, or 24 cents per acre. In order to assist pine owners the State examined the owner's lands, eliminating 169,846 acres which did not need eradication by the crew method, at a cost of $3200.90, or .018 per acre. 9976 Ribes were uprooted on these areas by the advance scout methods. The average number of Ribes per acre for the entire area worked was 2.3.

Pine Statistics.
(See Appendix for authorities)

1. Maine's forest area - - - - - - - - - - - - - - - - - 15,000,000 acres
2. White pine area - - - - - - - - - - - - - - - - - - - 3,000,000 acres
3. Percent of forest area in white pine.....20
4. Percent of white pine area with white pine under 20 years of age 50
5. Value of white pine stand $50,000,000.00

Maine, cont'd.

6. Lumber cut of white pine reported by Maine's mills, 1913-1920 incl.

1913 - 239,303 M ft B. M.	1917 - 256,014 M ft B. M.
1914 - 315,306 " " " "	1918 - 237,466 " " " "
1915 - 270,581 " " " "	1919 - 223,843 " " " "
1916 - 272,035 " " " "	1920 - 165,102 " " " "

7. Maine's rank in production of white pine in 1920, excluding western white pine -Second
(only exceeded by Minnesota)

- - - - - - - - - - - - - - - - - -

NEW HAMPSHIRE

Activities in New Hampshire are noted from various newspaper clippings:

From the Claremont Daily Eagle of Dec. 20, 1922:

"Gray Silver (well known to all Farm Bureaus) Endorses
Blister Rust Control.

Mr. Silver visited the South Deerfield infection area in company with Mr. Corliss. Quoting further from this clipping:

"In the South Deerfield area about 150 acres of pine are infected. On one-third of it the trees are 100 per cent. infected; on the remaining two-thirds, about 65 per cent. of the trees are infected. A singular fact noted here is that blister rust is no respecter of age in attacking a tree, as pines 35 to 40 years old bear the infection.

"Since the discovery of this heavy infection, this area has been carefully studied and treated, and eradication work has been carried out. The plot has been made a study area by both the New Hampshire State Forestry Department and the United States Bureau of Plant Industry. Each year a check has been made to determine the growth of blister rust in each infected tree, and in this way the investigators have been able to determine two things: The approximate time in which a tree, once attacked, is killed; and the practicability of eradication. The checks have proved that eradication has entirely checked the spread of the disease, as no new infections have since been found.

"Mr. Silver studied the control work being done and gave it his hearty endorsement. Said he: 'Any work so necessary to the farmers as this shall receive my endorsement. Commendation is due the New Hampshire Forestry Department and the Bureau of Plant Industry.' After a brief outline of the various means of raising funds for carrying on the work had been given, he stated his conviction that 'pine owners, particularly farmers, should support this work by their cooperation on town appropriations.'"

Mr. Newman (Jan. 15) sends in a copy of a resolution adopted by the delegates of the New Hampshire Farm Bureau at a recent meeting held in Concord.

New Hampshire, cont'd.

WHEREAS, it is estimated that the value of white pine in the State of New Hampshire is between 50 and 75 million dollars, and it is generally known that white pine as a crop is one of the most valuable assets of the farm, which is threatened with destruction by the White Pine Blister Rust, found prevalent in all parts of New Hampshire; and it has been definitely proven that the spread of White Pine Blister Rust depends entirely on the presence of currant and gooseberry bushes, and that its control depends entirely upon the destruction of these bushes, and

WHEREAS, measures for the control of the White Pine Blister Rust have been developed by the New Hampshire Forestry Department and the Bureau of Plant Industry, United States Department of Agriculture, which have proven practical, economical and efficient, and wherever applied are controlling Blister Rust;

BE IT RESOLVED, that the New Hampshire State Farm Bureau Federation at this meeting endorses the work of the State and Federal Governments in the eradication of White Pine Blister Rust, the menace to New Hampshire's great asset, the White Pine Forests."

Quoting an article by Mr. Newman, blister rust infection has been found in 181 towns in the state.

"Already, in New Hampshire, the Forestry Department, with the cooperation of the Government, towns, cities and individuals, has removed from nearly 750,000 acres over 8 million wild currant and gooseberry bushes at an average cost per acre of only 25 cents. Careful examination has brought to light two very encouraging features in connection with this work. Pine infections have practically ceased since the removal of these bushes, and with carefully trained crews, it is entirely possible to locate and destroy more than 95 per cent of the currant and gooseberry bushes."

Mr. Newman writes (March 21) that 74 New Hampshire towns have already appropriated an aggregate of $28,740.00 for cooperative blister rust control work. In 1922 town appropriations amounted to but $16,740. The state has received a blister rust appropriation of $32,000 for a two year period, $15,000 is available this year and $17,000 next year.

New Hampshire, cont'd.

Pine Statistics

1. Forest Area - 4,000,000 acres
2. White Pine Area - 2,500,000 "
3. Percent of forest area in White Pine 62.5
4. Percent of White Pine Area with white pine under 20 years of age ..... 90.
5. Value of white pine stand $50,000,000.00
6. Lumber cut of white pine reported by N. H. mills, 1913-1919 incl.

1913 - 181,885 M ft B. M.		1917 - 171,547 M ft B. M.	
1914 - 265,188 "	"	1918 - 188,569 "	"
1915 - 189,645 "	"	1919 - 178,012 "	"
1916 - 184,728 "	"	1920 - 121,202 "	"

7. New Hampshire's rank in production of white pine in 1920 (excluding western white pine) - Third
(exceeded only by Minnesota and Maine)

VERMONT

A number of clippings from Vermont newspapers have been received from Agent Stevens. Two ideas presented by him are worthy of repetition in other places. 1. Mr. Smith, a local lumber merchant of Rutland, a Conservationist, is willing to print at his expense 1500 business blotters on the subject of blister rust, and would be glad to use any available cuts of the disease suitable for such purposes. The wording of the blister rust statement used for such purposes should meet with the approval of the State leader. 2. The use of blister rust advertisements in the daily press has been tried by Mr. Stevens. Space for these advertisements is paid for by individual business firms or organizations interested in blister rust control work.

One of these ads is given below as a sample:

FARMERS

and

LAND OWNERS

A T T E N T I O N !

WHITE PINE

grows day and night,
grows seven days per week,
grows 365 days per year,
is continually increasing in value
because it is constantly
growing more scarce.
What other farm crop or
produce of the land will
work as steady for your
interests, with as little
labor and attention
from you?

THEREFORE, Protect Your

WHITE PINE

from the Blister Rust Disease.

"The Cost is But a Trifle."

Write for Further Information to

Mr. G E O. E. S T E V E N S

Blister Rust Agent

66 Church St. Rutland, Vt.

"Blister Rust Agent should appear after the agent's name in all cases, and there is no objection to the person or organization contributing the advertisement, including a brief statement at the bottom indicating who contributed space for the ad.

Mr. Fivaz writes that blister rust posters are not seen as frequently along Vermont roads as in some states. The Washington Office still has a good supply of "Save Your White Pines" colored posters available for use. Have any

Vermont, cont'd.

of the agents a constructive idea or ideas of new ways in which they can be effectively utilized?

A number of Vermont towns are considering the subject of town appropriations for blister rust control. The results of the town meetings have not yet been received.

Mr. Riley reports that during 1922 Ribes were eradicated on 13,123 acres, of which 1402 acres represent eradication by individual pine owners unassisted by direct state supervision. The number of wild Ribes destroyed last season was 201,270, cultivated Ribes 782, making a total of 202,052. 112 Pine owners cooperated with the state in the eradication of Ribes. The average cost per acre for Ribes eradication was $0.465, of which the cooperator paid $0.419, and the state $0.046.

Pine Statistics

1. Vermont's forest area - - - - - - - - - - - - - - - - - - 3,750,000 acres
2. White pine area - 86,000 acres
3. Percent of forest area in white pine.....2.3
4. Percent of white pine area with white pine under 20 years of age.....28.
5. Value of white pine $4,420,400.00
6. Lumber cut of white pine reported by Vermont's mills 1913-1920 incl.

1913 - 16,707 M ft. B. M.		1917 - 18,884 M ft. B. M.	
1914 - 15,435 "	"	1918 - 25,722 "	"
1915 - 15,040 "	"	1919 - 30,344 "	"
1916 - 13,924 "	"	1920 - 13,827 "	"

7. Vermont's rank in production of white pine in 1920, excluding western white pine - - - - - - - - - - - - - Ninth

The annual revenue to Vermont citizens from lumber, paper and pulp, wood turning boxes and firewood amounts to $27,000,000. Other industries, as planing mills, furniture and paper factories, produce products valued at $10,100,000, which with the $27,000,000 above equals $37,100,000 - not a bad revenue from the forest.

In 1911, according to the Bulletin on Wood Using Industries in Vermont,

Vermont, cont'd.

there were 39,608,222 board feet of white pine used in the State, of which only 6,949,532 ft. were grown in the state. Only 17.55% of the white pine used in Vermont wood using industries were grown in the state. The cost of white pine lumber used in Vermont but grown in other states was $695,728.70, practically all of which could have gone to Vermont citizens if they had raised a crop of white pine.

- - - - - - - - - - - - -

MASSACHUSETTS

Mr. Perry has summed up the work in Massachusetts for the past year as follows:

35 meetings were addressed in 25 towns with an attendance of 33,252.

38 Fair Exhibits were made.

Of 1185 pine owners visited, 1153 agreed to cooperate in protecting the pines from the blister rust.

A statement regarding the extent of blister rust infection in the state is taken from Mr. Perry's Annual Report for 1922.

> "On January 1, 1922, the records indicated that the disease had been found in Massachusetts in at least one of its stages of development, in 269 towns out of the total of 353 cities and towns in the state, in 92 of which it had been reported on pine, Since that time, however, altho no extensive scouting has been in progress, infection on pine has been found in 32 additional towns, making a grand total of 124.
>
> "In Petersham, a rather serious infection was discovered on the lands of the Petersham Associates where a number of infected pines were found in both plantation areas and native stands.
>
> "In Princeton, one very seriously infected young pine was found in the plantation area on the Wachusett Mountain Reservation.
>
> "In Essex County, particularly in Boxford and Topsfield, infection on pine can be found almost anywhere and it is interesting to note that, during the season, infection on pine has been found in every pine lot examined. It has been predicted that the disease will be reported in every town in the county within the next few months.
>
> "In Plymouth County, scouting during October resulted in the location of pine infection in all towns not previously reported as infected.
>
> "In northern Worcester County, Ribes have been so heavily infected throughout the season that there must be some area of heavily infected pine in that section. An attempt will be made this winter to locate the source of infection, if possible.

Massachusetts, cont'd.

"In Hampden County, in the town of Chester, a very serious infection area has just been reported."

During the past year 196 persons and firms cooperated with the state in Ribes eradication, of which 191 used state foremen and hired labor. The area eradicated totaled 61,642 acres, of which 24,252 acres were private lands, and 37,390 were state lands. A total of 1,565,662 Ribes were destroyed, 2,368 of which were cultivated bushes. The average cost of eradication was 15 cents per acre. 64 crew checks covering 501 acres showed 99.3% efficiency.

Mr. H. O. Cook reports that the Massachusetts Department of Conservation is assisting in blister rust control by referring to the Department of Agriculture a list of all parties purchasing white pine planting stock, in order that examination may be made of planting sites and owners advised regarding the necessity of eradicating Ribes as a protection to pine.

Pine Statistics

1. Massachusetts forest area - - - - - - - - - - - - - - - 3,000,000 acres
2. White pine area - 775,000 acres
3. Percent of forest area in white pine 25
4. Percent of white pine area with white pine under 20 yrs. of age 38
5. Value of white pine . . . . . $58,000,000.

6. Lumber cut of white pine reported by Massachusetts mills 1913-1920.

1913 - 121,739 M ft. B. M.	1917 - 90,941 M ft. B. M.
1914 - 65,589 " "	1918 - 99,377 " "
1915 - 106,824 " "	1919 - 104,299 " "
1916 - 101,567	1920 - 57,905 " "

7. Massachusetts' rank in production of white pine in 1920, excluding western white pine - Sixth

- - - - - - - - - - - - - -

RHODE ISLAND

During the past calendar year, Ribes were eradicated on 11,500 acres at a cost of 18.2 cents per acre, 11,896 wild bushes and 132 cultivated bushes being destroyed. A total of 122,997 acres have been covered in Ribes eradication since 1917, with a total of 95,773 wild bushes destroyed.

Pine Statistics.

1. Rhode Island's forest area, 400 sq. miles - - - - - - - 256,000 acres
2. White pine area - 125,000 acres
3. Percent of forest area in white pine - 48.8
4. Percent of white pine acreage bearing growth under 20 years - - - - - - - - - 80.
5. Value of white pine $1,250,000

6. Lumber cut of white pine reported by Rhode Island mills, 1913-1920.

1913 - 4,430 M ft. B. M.	1917 - 3,951 M ft. B. M.
1914 - 4,020 " "	1918 - 5,365 " "
1915 - 3,584 " "	1919 - 2,799 " "
1916 - 7,965 " "	1920 - 1,768 " "

7. Rhode Island's rank in production of white pine, excluding western white pine - Seventeenth

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CONNECTICUT

A summary of the blister rust work in Connecticut for 1922 has been received from Mr. Hicock:

"Eradication work was carried on in two towns not previously worked, i. e., Cornwall and Salisbury. In the former town 4400 acres and the latter 1325 acres were cleared of wild Ribes. In addition an area of 75 acres in the town of Canaan was worked for an association, making 5800 acres eradicated. Field work started on May 16th and ended on September 15th, and three crews were in the field most of the time. For this work local funds to the amount of $2300 were expended.

"Probably the chief result of the educational campaign was that it resulted in the raising of sufficient funds to keep three crews in the field during the season. Had it not been for these funds only about one half as much work could have been done with the state funds available.

Connecticut, cont'd.

"It is now planned to do eradication work in Cornwall, Salisbury, and North Canaan during the coming year. The plan in Cornwall will be to finish up the work started in 1922. The people of Salisbury have promised $1750 for 1923 and the town of Canaan $500. An equal amount will be spent from the state appropriation for eradication work in these two towns. In addition to the above a foreman paid from state funds, will probably be assigned to direct the laborers of the American Brass Company in eradicating Ribes on about 1,000 acres of plantations.

During the last year, 137,501 Ribes were destroyed on 6175 acres, at an average cost per acre of 75.3 cents. The Ribes bushes averaged 22 per acre.

Pine Statistics

1. Connecticut's forest area - - - - - - - - - - - - - - 1,483,300 acres
2. White pine area - 190,000 acres
3. Percent of forest area in white pine - - - - - - 12.8
4. Percent of white pine area with white pine under 20 years of age - - - - - - - - - - - - - - - 10.0
5. Value of white pine . . . . . $1,280,000.

6. Lumber cut of white pine reported by Connecticut mills, 1913 - 1920.

1913 - 11,626	M ft.	B. M.	1917 - 10,043	M ft.	B. M.
1914 - 10,604	"	"	1918 - 8,597	"	"
1915 - 8,817	"	"	1919 - 11,194	"	"
1916 - 10,283	"	"	1920 - 4,383	"	"

7. Connecticut's rank in production of white pine in 1920, excluding western white pine - - - - - - - - - - - - - - - - - - - Twelfth

The pine survey of the state has been completed and a full report of this by counties and towns has been published in Connecticut Forestry Publication No. 13, February, 1922. The forested area in these 5 counties equals 626,200 acres, of which 27 percent is in pine. The stand of white pine in these counties is 135,367 thousand ft. B. M.

. . . . . .

The Connecticut Forest Association has printed 7 REASONS why Business Men Should Put Their Influence Back of the Work of the Association.

"1. 40% of the lumber used in Connecticut is imported. It costs Connecticut citizens about $5,000,000 a year for freight on imported lumber.

Connecticut, cont'd.

2. Connecticut's industries are handicapped because of the scarcity of local forests.

3. 71.3% of Connecticut, or about 2,198,892 acres is unimproved and forest land, of this about 1,500,000 acres in forest or 50% of land area of state, but very little of it is producing lumber. It should be brought up to a high state of productivity.

4. With this area in producing forests and with local woodwork industries, labor conditions would be stabilized in the rural districts.

5. Public commercial forests (which should replace idle forest land) would furnish a playground for thousands of citizens.

6. The threatened timber shortage in the United States means higher costs for all industries which use wood, (but especially in New England far from the source of supply).

7. Non-revenue producing land over large portions of the State necessitates higher taxation to support the State administration. Producing forests therefore mean lower taxation for the manufacturer."

If these seven reasons should be thought of in connection with white pine, their direct relationship to the work of controlling the blister rust will become apparent.

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NEW YORK

Mr. Amadon has an excellent article in The Lumber World Review of Nov. 10, 1922 on "White Pine Comes Back in New York State." This is well illustrated with photographs of natural stands of pine. Some extracts follow:

"White pine is once more claiming the land that was originally its own in northern and eastern New York. On many abandoned pastures and fields that were at one time cleared of forest for farming, new growths of young white pine are coming in by a process of natural planting. Nature is thus aiding in reclaiming many acres of waste land.

"At present the main white pine belt of New York state lies in an area of about 800,000 acres, which begins at Lake George in Warren County and continues north to Plattsburg, extending 20 to 30 miles west of Lake George and Lake Champlain.

New York, (cont'd).

"A crop of white pine obtained through natural reproduction or artificial reforestation in the white pine belt is the best means of assuring profitable returns to private land owners and the state, which owns a considerable acreage in this region. The 800,000 acres of the pine belt are one of the State's biggest assets, commercially and scenically. Its value insures that it will be protected, increased and improved.

SPECIFIC
INSTANCES

"At Chestertown there is probably the oldest plantation in the state. Mr. Faxon, who lives in Chestertown now, once owned the tannery there, and during a slack period in 1884, in order to keep one of his older men busy, engaged him to dig up several thousand young pine from a meadow and transplant them on some pasture land in rows quite close together. The plantation received no attention as regards cultivation or thinning, and on account of the large size of the trees when put in, their growth was held back considerably for several years. In 1912 one-third of an acre was measured and found to yield at the rate of 23,000 feet to the acre. The growth could have been accelerated by removing a portion of the trees during the past ten years.

"Two miles from this plantation is another piece of land of about forty acres which a few years before the Civil War was an old pasture and was allowed to seed in from pines on adjacent land. At present there is a stand of white pine that will average no less than 55,000 feet to the acre, shown in one of the cuts.

"Near the village of Chestertown is a twenty acre tract belonging to William Remington, which up to the time of the Civil War was cultivated land. The year after the close of the Civil War this particular land was growing wheat. The price of grain in that and subsequent years was so low that wheat growing was abandoned in that section, and the field was turned into pasture. In 1874 the ground was seeded in from mature white pines around the edges of the field and today there is an exceptionally good stand, as the illustration shows. Two 1/4 acre sample plots in this 47 year old pine were measured in 1921; one gave an average stand of 78,160 feet to the acre, and the other 87,000 feet to the acre. About 1889 two adjoining fields were allowed to come back to white pine, and these now show, at the age of 30 years, an average stand of 12,200 feet to the acre.

PROTECTION
IS SIMPLE

"Because of the prevalence of the white pine blister rust in the pine regions of New York, it is necessary that protective measures be taken to safeguard these valuable stands of young trees that nature has planted. This disease spreads only by means of wild and cultivated currant and gooseberry bushes in the neighborhood of pines; hence adequate protection is afforded by uprooting

New York, cont'd.

all such bushes within 900 feet of the pine stand. The common garden black currant is an especially active disseminator of the rust and pine trees are not safe from infection when these bushes are growing within a mile of the stand. Black currants should be destroyed wherever they are found in the pine growing region, as their value is negligible compared with that of the white pine they menace.

"Without such protective measures being taken it is extremely unlikely that any young stand of pine trees under 25 years of age will reach profitable maturity in the area of general blister rust infection in northeastern New York. But the protection of the white pine is possible and practicable, and the young white pine that has 'come back' on abandoned farm lands in New York state is well worth protecting."

Under date of January 24, Mr. Amadon gives a summary of last year's work.

Number acres eradicated 11,030

Total number wild Ribes pulled.....637,121

Number wild Ribes pulled per acre..... 57

Cost per acre..... $3.09

This is an increase of acreage covered over the year 1921 of .....2556.

Pine Statistics

1. New York's forest area - - - - - - - - - - - - - - - - -12,000,000 acres
2. White pine area - 1,500,000 acres
3. Percent of forest area in white pine - - - 12.5
4. Percent of white pine area with white pine under 20 years of age - - - - - - - - - - - -40.0
5. Value of white pine stand . . . . . .$50,000,000.
6. Lumber cut of white pine reported by New York mills, 1913 - 1920.

1913 - 66,201 M ft. B. M.	1917 - 57,924 M ft. B. M.
1914 - 72,110 " "	1918 - 59,842 " "
1915 - 60,576 " "	1919 - 49,220 " "
1916 - 50,145 " "	1920 - 66,311 " "

7. New York's rank in production of white pine in 1920 excluding western white pine - - - - - - - - - - - - - - - Fifth (exceeded by Minn., Maine, N. H. & Wisc.)
8. Estimate of standing white pine timber - 2,890 Million bd. ft.
9. Estimate of standing timber, all kinds - 25,939.5 " " "
10. Percent of standing timber in white pine - - - 11.1

PENNSYLVANIA

Dr. W. A. McCubbin, in his annual report for 1922, sums up the blister rust situation as follows:

(1) Occurrence of Blister Rust on Ribes in Pennsylvania as determined by scouting.

"Examination of wild and cultivated Ribes was made in the months of August and September in ten counties (Northampton, Monroe, Pike, Wayne, Susquehanna, Bradford, Sullivan, Wyoming, Lackawanna and Luzerne). In 118 localities in these counties the rust was found in only five places in two counties, Wayne and Lackawanna. In Wayne County where the disease was present last year more careful scouting this summer earlier in the season failed to locate any rust south of last year's limits. Two other rust infections were found in this county toward the northern end. The presence of a considerable number of cultivated black currants in this county leads us to think that the results indicate in a fairly reliable way the extent of the infection.

"In Lackawanna County only one infection was found near Carbondale, on black currants. This is somewhat farther south than the Wayne County Area.

"In Susquehanna County where rust was found at Montrose in 1921 no sign of it was seen this season. The black currants rusted last year had been destroyed.

"In general it may be said (1) that in all cases but one the disease was found on cultivated black currants. The exception concerned Ribes cynosbati on which slight infections were found on six bushes in one abandoned orchard pasture by an old house. It is curious to note that only in this same spot was the disease found in 1921 on wild Ribes; (2) that the rust on black currants when found was usually plentiful especially in certain spots, indicating early infection; (3) that within the area surveyed both this year and last the presence or absence of rust was the same for both years in all cases. This points to the possibility that in some previous season a more or less scattered infection occurred over a wide area and the rust has since persisted by overwintering."

(2) The Wild Ribes Situation in Northeastern Pennsylvania.

A survey of four types of habitat was made concurrently with the work of scouting for the disease in August and September. The types were fence rows, woodland, pasture and swamp.

Pennsylvania, cont'd.

"The survey of fencerows in 13 cases, covering 3485 yards, shows an average of 1.8 Ribes per hundred yards. These figures include four examinations in which Ribes were entirely lacking.

"The average for 42 counts in woodland, covering 56.25 acres was 2.0 per acre with Ribes absent entirely in 28 of these counts. In the 23 counts made in pasture, chiefly on stony hillsides, the 38.5 acres gave an average of 12 per acre. In 11 of these counts Ribes were altogether absent.

"Swampland of the type so plentiful in glacial drift regions is comparatively scarce in the counties covered. In the four swamps visited Ribes were found in but one; hence the recorded average of 0.4 per acre has little significance. The total area of woodland, pasture and swamps covered in the survey of 69 places in 9 counties was 99.25 acres; in this area occurred 580 wild Ribes, or an average of 5.8. In the 69 counts, however, Ribes were absent in 42 cases, thus indicating a much higher percentage of Ribes where they do occur.

"Certain features stand out very distinctly in this survey: (1) The total number of Ribes found is very small compared with the records from more northern regions; (2) the absence of Ribes in swamps or low ground where they are likely to be much more dangerous than on dry locations; (3) the comparative scarcity of Ribes in woodland; (4) the irregular occurrence of Ribes in all habitats; and (5) the rarity of their occurrence except in the northern tier of counties.

"The species occurring generally is R. cynosbati and it is plentiful only on rocky hillsides and stony pastures. In such locations its ability to damage pines is comparatively small. A few plants of R. rotundifolia were observed.

WISCONSIN

In 1922, the State Leader, Mr. Ninman, was assisted by one Agent, Mr. W. C. Thompson. Mr. Ninman took direct charge of District 1, including Polk, Burnett and Washburn Counties. In the first two counties a considerable portion of the pine lands had already been freed of Ribes. During the year two crews were kept busy eradicating Ribes in this District. Educational work and scouting for the disease was carried on.

Scattered single bush infections were found in places previously scouted in Polk County, but such infections were not numerous. Previous

Wisconsin, cont'd.

eradication of diseased pine and Ribes has apparently had a decided effect in slowing down the spread of the blister rust.

In Burnett County which is largely sandy, the Ribes infections were extremely few even near old pine infection centers.

In District 2, comprising Dunn, Chippewa and the south half of Barron Counties, Mr. Thompson was engaged in general educational work. In this region, largely agricultural, which is "between the axe and the plow", the value of white pine is little appreciated.

In the Prairie Farm Area in Barron County, there is about 1500 acres of second growth medium-sized white pine. Blister rust was widespread in this area on Ribes in the summer of 1922, but only two pines were found diseased. 26 cooperators were secured this past season; this included practically all pine owners living near Prairie Farm. The owners agreed to eradicate all of the Ribes that they could find in or near their pine groves, providing that a state crew would check over the area for the bushes missed.

On the location of a serious infection last summer south of Elk Mound in Dunn County, arrangements were made with the 2 pine owners concerned for the immediate eradication of Ribes by their own or hired labor. About 100 infected pines were to be cut this last winter. The practical demonstration of seeing this damage done to the pines by this disease was sufficient to persuade many pine owners near the neighborhood to eradicate their Ribes.

In 1922 the area covered in Ribes eradication amounted to 4770 acres, an increase of 16.7 per cent over the average acreage eradicated during the preceding five years.

Wisconsin, cont'd.

Pine Statistics

1. Wisconsin's forest area - - - - - - - - - - - - - - - 14,000,000 acres
2. White pine area - 800,000 acres
3. Percent of forest area in white pine - - 5.7
4. Percent of white pine area with white pine under 20 years of age - - - - - - - - - - 75.0
5. Value of white pine stand . . . . . .$17,000,000.

6. Lumber cut of white pine reported by Wisconsin mills, 1913-1920.

1913 - 308,841	M ft.	B. M.	1917 - 160,630	M ft.	B. M.
1914 - 223,433	"	"	1918 - 126,228	"	"
1915 - 191,306	"	"	1919 - 125,959	"	"
1916 - 187,447	"	"	1920 - 88,979	"	"

7. Wisconsin's rank in production of white pine in 1920 excluding western white pine - - - - - - - - - - - - - - - - - - - Fourth

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MINNESOTA

Only a small amount of Ribes eradication work was carried on in this state during the past year, the area eradicated being but 75 acres. Exhibits were placed at 6 county fairs and at the state fair, the attendance at the former being 60,000 and at the latter 371,444.

A study was made during the past year of the amount of infection in the state. A resume of the conditions found on the old infection areas is given by Prof. A. G. Ruggles in his report on cooperative work in Minnesota for 1922.

"1. The Afton infection area contains infected Ribes and an occasional old pine infection. Some pine reproduction is appearing, and is not visibly infected.

2. Harris swamp infection area apparently contains no infected pine or Ribes this year.

3. The Pine City area is not infected.

4. The Rush Lake area has many old pine infections, and Ribes are generally infected where there has been no eradication.

5. The southern end of the Rush Lake area, east of Goose Lake contains infected Ribes, but no infected pines were found within 1/4 mile of the infected Ribes.

6. In the Dalbo area Ribes were heavily infected. Mr. E. J. Streater found two infected pines in this vicinity.

7. No blister rust infection was found in nurseries.

8. Areas infected previously in Lake, St. Louis, Carlton, and Itasca counties were apparently not infected this year. The only

Minnesota, cont'd.

infected areas found were those known to exist previously, in Washington, Chicago, Kanabec, Pine, and Isanti counties.

9. The total acreage of pine areas in the state where pine infection may be found is approximately as follows:

Rush Lake	150
Afton	40
Dalbo	10
Miscellaneous	5
Total -	205 "

Fire, following destructive lumbering, has resulted in the loss of much of the second growth white pine. Sometimes even the seed trees have been destroyed so that reforestation will be necessary to bring pine back upon the area.

Professor Ruggles points out that the bulk of the second growth white pine is found in the southern part of the cut-over pine region, which is more thickly settled and hence protected from fire the longest.

As the virgin white pine is cut off there will be a better appreciation of the value of young growth, and at that time, blister rust control will find a readier response among the land owners.

Pine Statistics

1. Minnesota's forest area - - - - - - - - - - - - - - - - 20,000,000 acres
2. White pine area - 5,500,000 acres
3. Percent of forest area in white pine - - - - 27.5
4. Percent of white pine area with white pine under 20 years of age - - - - - - - - - - - - -10.0
5. Value of white pine stand . . . . . .$160,000,000.
6. Lumber cut of white pine reported by Minnesota mills, 1913-1920.

1913 -	1,027,265	M ft. B. M.	1917 -	901,941	M ft. B. M.
1914 -	1,108,021	" "	1918 -	830,439	" "
1915 -	869,574	" "	1919 -	560,544	" "
1916 -	962,765	" "	1920 -	429,210	" "

7. Minnesota's rank in production of white pine lumber in 1920 - First

NEW ENGLAND

Mr. H. J. Ninman, in charge of blister rust work in Wisconsin, has recently taken a trip through New England, and has written up his comments on that section as follows:

"Briefly speaking, I must say that I am surprised at the small percentage of land which can be brought under the plow and worked to advantage with farm machinery.

"Another condition of vital importanceis the fact that the soil is so low in calcium that leguminous crops cannot be grown to advantage. This, of course, prevents the raising of any considerable amount of livestock.

"On account of the above conditions, it seems safe to say that the New England farmer will not be able to compete successfully with the farmer of the middle west and the south in the cultivated agricultural crops, nor in livestock excepting poultry.

"It seems fairly well established that the New England landowner cannot grow hardwood at a profit for many years to come. The chestnut trees are practically wiped out by the chestnut blight. Oak, maple and elm, as well as other valuable hardwood species, are so severely attacked by the Gipsy moth that they cannot be grown at a profit. This is generally admitted by landowners.

"Of the conifers, spruce is important in Maine only. Norway pine is not of much importance because seeds are not produced in sufficient quantity.

"As I see it, and as many landowners of New England admit, the only great dependable agricultural crop is the white pine. Some admit that the farms would have to be abandoned if it were not for whitepine. In fact, many farms having no white pine are abandoned.

"As I understand it, the manufacturers of cotton and woolen goods, shoes, clothing, hardward, toys, etc. are so dependent upon boxes and crates, whether of wood or paper, that profits depend upon a liberal supply of timber grown locally. If timber and paper must be imported, the cost will be just great enough so that New England cannot compete with manufacturers of the middle west, the south, and foreign countries. The increase in cost of production and packing does not need to be very great in order to wipe out profits. If profits are eliminated the manufacturers will be obliged to move elsewhere. In fact, cotton manufacturers are already moving south.

"From the above, it would seem that no mistake can be made in a vigorous campaign against the blister rust. Moreover, it seems important to induce landowners to grow all the pine possible on the waste lands."

New England, cont'd.

Concerning Mr. Ninman's statement regarding growing hardwoods, Mr. Carter of the Forest Service made the following comments: That it was too sweeping a statement that hardwoods in New England could not be raised profitably for lumber, pulp cordwood, and special industries. Of course volume for volume it must be admitted that coniferous stands produce more wood per acre than hardwood stands.

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Mr. Pierce comments on value of agricultural crops in New England, to the effect that in certain localities, potatoes, orchards, tobacco and truck crops and the dairy industry are very valuable, yielding more per acre than the annual timber production value per acre by many times.

The Census figures for 1920, however, show to what extent farm land is decreasing in New England, thus increasing the potential forest land. This is where white pine should play its part, in reforesting a high percent of these abandoned lands. The following table shows this change in the number of farms and improved land in farms:

State	Percent decrease in number of farms	Percent decrease in all lands in farms	Percent decrease in improved land in farms	Decrease in acreage in improved land in farms
Maine	19.6	13.8	16.2	383,328 acres
New Hampshire	24.1	19.9	24.4	226,283 "
Vermont	11.1	9.2	3.5 increase	*57,630 "increase
Massachusetts	13.3	13.3	22.0	255,667 "
Rhode Island	22.8	25.2	25.5	45,489 "
Connecticut	15.5	13.1	29.1	287,166 "

Total Net Decrease in Improved Land in Farms----------1,140,303 acres

*This is the only increase in New England.

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WESTERN STATES.

Mr. Stephen N. Wyckoff is now in immediate charge of the western office, which is still located at 429 Lyon Building, Seattle, Washington.

The work in the West this year will consist of:

1. Cooperating with the individual states in locating and securing the destruction of the cultivated black currant in northwestern Oregon, northeastern Washington, northern Idaho and northwestern Montana, in order to delay the spread of the blister rust from infected regions.

2. Carrying out a local experiment in British Columbia to determine the reach of the disease from Ribes to western white pine and to secure data on damage in cooperation with the Canadian authorities.

3. Experiments to determine the need and feasibility of applying local control measures in commercial western white pine regions.

4. General educational work through public schools, private and state forestry organizations and the federal Forest Service.

Mr. Detwiler has left Washington for an extended trip, in connection with the western work of the office.

BRITISH COLUMBIA

A letter from Dr. A. W. McCallum, Forest Pathologist with the Dominion Government, dated April 12, states that Mr. A. T. Davidson found aecidia on *Pinus monticola* about 30 miles east of Vancouver on March 17th and later in the month found the same stage of this rust at several other points along the coast. Last year it was April 29th that he found aecidia for the first time though they probably appeared long before that date. This makes a very long period for the dispersal of aecidiospores in British Columbia.

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GENERAL

Seminars

Seminars were held during March and April in Maine, New Hampshire, Vermont, Massachusetts, Connecticut and New York, where the Blister Rust Agents came together for a week's intensive training and discussion of their problems. The State Blister Rust Leaders were assisted by specialists in Blister Rust, Forestry, Pathology and Extension Methods. Reports from the field force stated that these seminars were very much worth while, full of pep and inspiration.

Extension in Farm Forestry

A conference of representatives of Agricultural Colleges, Forestry Departments, and Forestry Associations in 10 Northeastern States was held in New Haven, February 21 to 24, 1923, to consider Farm Forestry Extension work. A temporary executive Committee was appointed as follows:

Chairman - Harris A. Reynolds, Sec. Mass. Forestry Association, Boston, Mass.
Secretary- Karl W. Woodward, Prof. of Forestry, N. H. College, Durham, N. H.
M. C. Burritt, Vice-Director of Extension, Ithaca, N. Y.
G. H. Collingwood, Assistant Extension Prof. of Forestry, Ithaca, N. Y.
S. T. Dana, Forest Commissioner, Augusta, Maine.
W. O. Filley, Forester, Conn. Agricultural Experiment Station, New Haven, Conn.
J. D. Willard, Director of Extension, Amherst, Mass.

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Professor G. H. Collingwood, Forest Extension Specialist in New York State, will leave the state employ on May 16 to take up a larger work along the same lines with the U. S. Department of Agriculture.

In furthering our blister rust educational program in the East, the more fully we utilize extension methods, the better and faster our work will forge ahead. We need the full strength of good extension methods and close cooperation with county agricultural agents to obtain the best results.

While extension methods formerly focused on individual activity, today it focuses on the collective endeavor of community work, and finds the latter system productive of greater results.

BLISTER RUST QUARANTINE

Inspection

Nine men have been stationed at points along the Mississippi Valley Quarantine line examining nursery stock shipments for blister rust host plants. Inspection began at Kansas City on March 8; at Omaha, Chicago, and St. Louis from March 22 to 25; and Inspector Ninman began work at St. Paul on April 13.

In the Far West inspectors have been stationed at Denver, Ogden, Seattle, and others at points in Washington and Oregon. Work began March 8.

Violations

Thirty-seven violations have been reported to the Washington Office up to April 23, 1923; 33 of them being shipments of Ribes and 4 shipments of pine. 17 of these shipments were by parcel post, 18 by express and 2 unknown.

New Quarantine Regulations

Federal Quarantine 54 was extended to take effect March 2, 1923, to cover the whole state of Washington, "No five-leafed pines and no currants or gooseberry plants (Ribes and Grossularia) shall be moved or allowed to be moved interstate from the said State of Washington."

QUESTIONS AND FACTS

What is the largest tree infected by the white pine blister rust that you know of? The Washington Office would like to receive information, including

photographs where possible, of these big trees. No prize offered!! Blister Rust Photograph 251, a copy of which is in the new Sales Book, shows a white pine 24 inches in diameter at breast height with 15 feet of top killed by the blister rust. This tree was 50 feet in height, and 6 inches in diameter when infection occurred. Photo taken at Brunswick, Maine, in 1920. Even if your largest infected tree is not up to this diameter, we wish to locate the biggest ones in each state. Mr. Hodgkins reports some big white pines at Durham. Have you seen larger ones? Under date of March 2nd he writes:

> "A stop was made at Durham, N. H., and we were shown through the College Forest by Mr. Boomer. This bit of forest is particularly interesting, as much of the stand is virgin pines. Some of the trees are five feet in diameter and contain at least 3000 feet board measure.

Mr. Samuel Dinwiddie, who was engaged in the work in Massachusetts last year was inspired by blister rust to burst into poetry:

WHITE PINE BLISTER RUST

The Blister Rust is a fungus disease
That lives on the white pine tree,
It will kill the pines just as sure as the world
If you do not listen to me.

It came from Europe some years ago
And much damage it has done,
But much more will it do in the next few years
If you are going to take it in fun.

We all know of Chestnut Blight,
And when started what was said,
"Oh go on, you're crazy."
But now the chestnuts are dead.

Are we now going to be so foolish
To laugh at this disease,
At the risk of our lumber industry
And the beautiful white pine trees?

The scientists have made a study
And this is what they say,
"Just pull your currants and gooseberries
But better start today."

So if you pull these bushes
For 900 feet around,
The pine trees will be safe
And no blister rust be found.

Let's cooperate and work together
And do the best we can
To get control of Blister Rust
And drive it from the land.

Samuel Dinwiddie.

Appendix

Authority for the pine statistics is here given:

No. 1.

Maine - Forest Protection and Conservation in Maine, by E. N. Colby, Forestry Commissioner, 1917, p. XXVII.

New Hampshire - Bulletin 4 of N. H. Forestry Commission, 1914, p. 8.

Vermont, Massachusetts, Wisconsin and Minnesota - U. S. Forest Service, Statement of May 1, 1922 on "Area needing protection" under Weeks Law.

Rhode Island - The Forests of Rhode Island, by Fred W. Card, Bull. 88, R. I. Exper. Station, Oct. 1902, p. 24.

Connecticut - Control of White Pine Blister Rust in Conn. 1909-1921, by W. O. Filley and H. W. Hicock, Bull. 237, Conn. Agric. Exper. Sta., Feb. 1922, p. 326.

New York - A. B. Recknagel. Results of the Timber Census in New York; New York Forestry, Vol. 5, No. 3. August, 1920.

No. 3.

Calculated by R. G. Pierce.

Nos. 2, 4 and 5.

Data has been supplied for each state by the State Forester, and published by Mr. S. B. Detwiler in Supplement 17 of the Plant Disease Bulletin, June 15, 1921, in "Status of White Pine Blister Rust Control in 1920-1921."

Nos. 6 and 7.

Bulletins of the U. S. Department of Agriculture on The Production of Lumber, Lath and Shingles, for the years 1913 to 1918, and 1920. Only the reported lumber cut has been given. It must be realized that this does not represent the actual lumber cut, since some mills make no report. In 1916, the reported cut was 86.3% of the computed or actual cut, while in 1917, the reported cut was 91% of the computed cut.

Nos. 8 and 9.

A. B. Recknagel, same as for No. 1 for New York.

No. 10.

Calculated by R. G. Pierce.

Prepared by R. G. Pierce.

UNITED STATES DEPARTMENT OF AGRICULTURE

Bureau of Plant Industry

Washington, D. C.

Blister Rust Control August 25, 1923.

The Blister Rust News, Vol. 7, No. 3.

(Confidential, not for publication)

. . . . . .

Eastern States

MAINE

Mr. S. T. Dana has sent in a letterhead on which all correspondence relating to nursery stock shipments is written. This gives a good suggestion which might be used elsewhere in connection with the shipment of young white pine nursery stock.

State Forest Nursery,

Orono, Maine.

Warning to Planters of White Pine - - In order to protect white pine plantations from blister rust, and assure the trees reaching maturity, it is considered vitally important, by the best authorities on the subject, to destroy all species of CURRANTS and GOOSEBERRIES, both wild and cultivated, from the areas to be planted; and for a distance of from 100 to 600 yards about the plantation.
Blister Rust - Does not spread from pine to pine. It can be prevented by eradicating all currants and gooseberries.

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From the Kennebec Journal of July 24, is clipped the following:

"The work in blister rust control in the State is at midsummer height. From field trips made in several of the counties, W. O. Frost, State Leader in blister rust control, reports that the field work is progressing well and that pine owners are seeing the urgent necessity of protecting their pine lands from the blister rust. At the present time there are four permanent county agents engaged in the work, they being E. E. Tarbox of Sanford, G. H. Kimball of Auburn, S. D. Conner of Portland, and D. S. Curtis of North Bridgton. In addition to these there are 16 temporary assistants.

Maine cont'd.

"The following figures will show that white pine owners are taking blister rust seriously and are cooperating with the State and Federal governments in control measures. During the month of June 247 private owners spent $1846.64 on eradication work in 20 towns where $1414.03 of town money was expended in the hire of foremen, a total of $3,159.67. For this amount of money 13,774 acres were eradicated at a cost of 23¢ per acre, and 239,933 wild ribes (currant and gooseberry bushes) and 2168 cultivated Ribes were destroyed."

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In Cumberland County, Mr. S. D. Conner holds forth. In this county work is being carried on in 7 towns, the eradication being under the direct supervision of a town foreman in each case. Four scouts are at work in these towns, and doing educational work among the farmers. In some places one scout is able to keep 3 town foremen on the jump, while in other localities, it is difficult to find Ribes enough to keep one crew going. Little or no opposition has been encountered. Every farmer interviewed has been ready to do his bit to protect his pine from blister rust.

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Forestry versus "Bugs".

"It has been found from experience in this county (Cumberland), that better cooperation may be had from the farmers if they are approached from the forestry viewpoint rather than from a pure blister rust point of view. The average farmer here is fed up on 'bugs and pests', that is about all he hears, and to spring another one on him in pure form is likely to start a riot. On the otherhand, Forestry is a comparatively new subject to the farmer; he has heard of it, knows it concerns the trees, and every farmer in this locality knows that an acre of good trees is worth money. Most every farmer owns one or more acres of pine and in the majority of cases he looks at those trees from a dollars standpoint. He pricks up his ears when you tell him that in the past the woodlot has kept his farm on the map. Prove to him that the woodlot is one of the most profitable parts of his farm today and he is interested. Show him that he can get more dollars from his woodlot than he is now getting and he becomes enthused and finally when he sees something, that may be easily controlled destroying that woodlot he is ready to do his part to protect the trees. The man who admits that his woodlot is valuable and who sees that it is menaced by blister rust is a mighty queer sort of individual, if he will not let you help him out of the difficulty."

S. D. Conner.

Maine cont'd.

Mr. W. O. Frost writes that all of the blister rust agents intend to work County Fairs, and have good exhibits of blister rust for them. Specimens were collected this spring, with these fairs in mind. Registration books will be kept so that all interested parties may sign up for visits from the agents. The "show area" at Brunswick was ruined by squirrels this past winter, for the diseased bark was gnawed from larger trunks and limbs. The aecial crop on these trees is almost none at all. Frost ascribes this to the deep snow of the past winter. On July 20, it was reported that "A few red currants heavily infected with blister rust were discovered this past week in the town of Livermore."

Mr. Frost will give an illustrated talk on Blister Rust at the State Field Meeting of the Knox Academy of Arts and Sciences, at the Knox Arboretum, Thomaston, August 22.

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Mr. M. E. Watson, former Blister Rust Agent in York County, has left the work to take up his new duties as State Extension Forester. Mr. M. E. Tarbox, who has just graduated from the Harvard Forest School at Petersham, will take Mr. Watson's place. Mr. Tarbox has been engaged in research work on white pine this past year at Petersham.

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A despatch from Augusta, Maine, August 2, reports that "Gov. Baxter today named Neil L. Violette of this city as acting forest commissioner to fill the vacancy caused by the resignation of Samual T. Dana.

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NEW HAMPSHIRE

"Mr. Locke Bullock, Education Agent in Hillsboro County, resigned June 25th, and Mr. Stephen H. Boomer has been appointed to fill his place. Mr. Boomer is a graduate of the University of New Hampshire and for a year has been acting as assistant to Professor K. W. Woodward, Forester.

"Mr. Geo. F. Richardson, Jr., formerly employed for a number of seasons in Blister Rust Control and later as an assistant district fire chief for the Forestry Department, has been placed in the position of an inspector and checker of blister rust crews. Mr. K. K. Stimson, who has been acting as a State Checker, has been temporarily furloughed on account of sickness.

"One of the largest amounts yet subscribed by a pine owner in this state was recently secured by Mr. Thos. J. King, Educational Agent in Merrimack County. The cooperator who Mr. King was successful in securing was an organization known as the United Society of Shakers. This society appropriated $1,000 for control work upon their property in the town of Canterbury, N. H.

"Interest in reforestation has grown to such an extent in Strafford County that thru the efforts of Mr. W. J. Cullen, Educational Agent, plans have been pretty well matured for the establishment of a County Forest nursery which will probably be managed to a large extent by the Strafford County Farm Bureau. As evidence of the need of such a "plant" mention might be made of a request on the part of one lumberman last spring who desired to secure 600,000 white pine for planting some cut-over land. The State Forest Nursery had already sold out its available stock and was therefore unable to do this work.

"At the present time field work is well under way in New Hampshire and the largest field force which has ever been employed is now at work in the removal of wild and cultivated Ribes. At the present writing 179 men are employed.

New Hampshire, cont'd.

Control work for this season has been completed in the towns of Hooksett, Dunbarton, Pembroke, Pittsfield, Canterbury, Amherst, Hollis, Mt. Vernon, Nashua, Jaffrey, Marlow, Wolfeboro, Tuftonboro, Brookfield, Belmont, Lempster, Warren, Bethlehem, Holderness, Epping, Plainstow, Madbury, Rollinsford and Dover.

L. E. Newman."

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Unbelievers in Blister Rust Become Stanch Friends of the Work.

"Yes, I have secured the cooperation of a few cantankerous individuals since I came into this County. One gentleman in particular in the town of Lisbon has been circulating reports that there was no such disease as Blister Rust and he was primarily instrumental in killing the appropriation at Town Meeting. I took him and a few of his friends over some generally infected areas in his own town and now he can't do enough for the cause. I am a firm believer that the best way of convincing people is to take them right out into their lots and let them see the evidence. This fact has won considerable private cooperation for me this summer. Besides town appropriations I have secured individual cooperation from twelve, ranging from $80.00 to $300.00.

Thos. L. Kane."

VERMONT

A batch of newspaper clippings, from Mr. Geo. E. Stevens, shows the right use of the press in disseminating information on the blister rust and its control and in stimulating inquiries.

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Diplomacy Secured Cooperation in Control Work Where Direct Appeal Failed.

"First. (A prosperous farmer). We did his neighbor's work well for the lowest possible cost and asked the neighbor to say a good word for the work. Put specimens in his grocery store and convinced the people in his Bank that control methods were practicable and the cost per acre very low as compared to pine values.

This pine owner came to me for an interview where I had my exhibit at the County Fair. In other words, I found out who this pine owner had confidence in and I convinced them and in return they convinced the pine owner. This man's sister was in charge of a girl's camp, so I spoke to the girls and left each one a bulletin. The sister asked where they might find infected pine and I referred her to her

Vermont, cont'd.

brother's plantation (much to her surprise). I signed the area for eradication work soon after.

"Second. (A wealthy retired farmer). Could not get an interview or a reply from a letter. First I secured all adjoining cooperators. Had crews hang as many Ribes on fences near road as possible and not use extra time. Convinced his personal friend and did his work well at $92.00 less than the estimate. Took fruiting pine specimens to his Bank. Took many pine infections and interviewed the Boss Farmer and Supt. Then I got an interview with the pine owner and signed him up for 600 acres after I had been on the trail for about six months.

"Third. (Supt. of an Institution). Could not get an interview with the superintendent of the institution. So I secured the cooperation of two trustees of the institution and the cashier of the bank where the institution did their business, and asked the cashier to try and arrange and interview for me with the Supt. and he did so by telephone. I produced data and specimens enough in ten minutes to convince the Supt. and signed him up for his area of 1000 acres.

S. V. Holden."

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MASSACHUSETTS

Mr. H. O. Cook, Chief Forester, under date of June 22nd, writes that:-

"Three of our men started pulling Ribes today on a 300 acre plantation in the north part of the town of Ashburnham. I was looking over some land in Ashburnham yesterday and pulled up 5 infected pines, and found one 20 foot one entirely dead. You can soon initiate me into the order of 'Blister Rust Hounds.' "

This plantation was completed by July 16 and the men from the Forester's office were working on other plantations in the same town.

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Pine Owner Expresses Satisfaction with Control Work.

A letter to Mr. Perry from a pine owner in North Egremont is worth quoting from:

"Mr. Dickie and Mr. Anderson with such additional help as I could furnish spent 11 days on my property and during that time destroyed 3800 currant and gooseberry bushes, examined 2550 pines, found 317 infected (12.4%) with the blister (rust), and cut out 403 infections, some half dozen were so badly infected that I have since cut the trees down.

"In view of the fact that for the past three years I have been searching and destroying gooseberry bushes and supposed that I had

Mass. cont'd.

all of the gooseberry bushes on my place eradicated, it was most fortunate that I secured the services of your department to assist me. I now feel that we have a good show of saving our pine trees.

"I want to assure you that I feel most indebted to Mr. Wheeler and Mr. Dickie for their active cooperation. Mr. Wheeler made several calls while the work was in progress."

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L. W. Hodgkins writes of conditions in Massachusetts May 22 - June 19.

In Plymouth and Norfolk counties there are very few wild Ribes except in swamp areas. Mr. Brockway has 2 scouts working with him on preliminary scouting. Two pine infection areas present some very interesting features. One in Rochester, just over the Middleboro line, interesting in that the pine and infecting Ribes are growing together; in fact, the pine are shading out the Ribes. Originally there were about 200 red currants, in that part of the field near a few large pines. These pines have seeded in along the edge of the field and into the Ribes plantation and now there is a good stand of pine reproduction, from young trees to 12 years old. Apparently the currant bushes are being overtopped and shaded out. I spent about an hour here with Mr. Brockway and one scout and could find only 5 trees infected with rust, all of which were 1919 infections, and some of them fruiting.

Mr. Morse in Franklin and Hampshire counties has 2 scouts with him. Hundreds of acres, whose owners had agreed to eradicate the Ribes on their property, were found to be free from Ribes by the scouts, or had so few Ribes that no crew work was necessary, for the bushes were pulled by the scouts. With 2 pine owners and Agent Morse, Mr. Hodgkins went over about 500 acres, but found no Ribes. One infected pine was found in an adjoining property, probably infected by a few red currants near a house on an abandoned farm.

The Hickory Club of Orange has started reforestation on its property since the property was scouted by the State Scouts and found Ribes-free.

Infections are very light in this section; 4 spot infections were found in Warwick, New Salem, Prescott and Orange.

In Hampden County, Mr. Wheeler, who has one scout and one crew, has finished eradication work on the Springfield Watershed comprised of 6,000 acres; and is now at work on the Russell Watershed of 2035 acres. The town of Russell set out 15,000 white pine this spring.

On a day's trip through Tolland and Greenwich, one new infection area was located in Tolland in a stand of young pine. The disease seemed to be coming from one large prickly gooseberry (Ribes cynosbati) near the road. The infection was traced about 700 feet to the south of this bush.

In southern Worcester County, Mr. Black spent a day with Mr. Hodgkins. The work here is largely one of scouting; the larger percent of this section of the county is Ribes-free. Nearly all Ribes found are in swamp areas and are R. hirtellum.

Mass. cont'd.

In northern Worcester County, Mr. Merrick has men working in Winchendon, Royalston, Ashburnham and Ashby. One crew was working in Winchendon and 6 men scouting in the other towns. In May the crew worked 205 acres and the scouts worked 8876 acres. In the Town of Ashburnham no gocseberries have been found to date. Ribes found by scouts are in swamps and are principally skunk currants. In the Woutatic Mts. skunk currants are general and nearly to the summit, 1850 feet elevation; blister rust is quite general.

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Mr. Perry is interested in minatures. Witness the following:

On May 8, he forwarded the Washington Office a pine seedling 5 inches high, showing aecial pustules at the base, believed to be one of the smallest diseased specimens of pine in captivity. This was collected by State Inspector Dick on May 3 at Lakeville.

On July 17, were received 3 tiny Ribes seedlings - 1, 1 1/2 and 2 inches long. The primary leaves still remain attached to the stem of the 2 larger plants. On the 1 1/2 inch bush are well developed telial columns, while the larger plant shows 2 leaves with uredinia and telia of the blister rust. The Ribes plants were sent in by Mr. F M. Dickey, one of the State men working at North Egremont.

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RHODE ISLAND

Mr. O. C. Anderson says he has yet to meet a cantankerous individual who objects to work of eradication being done on his farm. Four men are now eradicating Ribes in the town of Exeter. Wild Ribes are more abundant here than usual.

Advance scouting methods are used entirely, two men working in pairs, after Ribes have been found along a stream; in this way the acreage possible to be protected in one season is increased.

Mr. Anderson writes that up to July 19 no infections on pine or Ribes have been found this year, though Ribes near this section (Exeter) were found infected last year.

CONNECTICUT

Mr. Hicock, who has been on leave since the middle of June on account of sickness, returned to his work August 1. Mr. W. O. Filley has been supervising the work in the state during Mr. Hicock's absence.

Mr. Wilfong during June was supervising 3 to 4 state crews on private cooperative work in Litchfield County.

Mr. Round, who has been an agent in this state since May, 1922, resigned on July 31, 1923.

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NEW YORK

State Farm Bureau Endorses Blister Rust Control Work.

"Whereas, blister rust is now exacting a toll in New York State little realized by the average farmer and spreading rapidly to areas not infected,

"Therefore, be it resolved, that the board of directors of the N. Y. State Farm Bureau Federation heartily recommends the work the conservation commission of New York State is doing with this disease and urges the county farm bureaus concerned to lend their best efforts to aid in its eradication."

The above is a copy of a resolution passed a few weeks ago - Aug. 2, '23.

H. H. York.

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Mr. Amadon, under date of June 20, writes:-

"J. D. Kennedy, P. K. Miller and H. H. Knowles have been in training for positions in Washington, Saratoga and Fulton Counties as Educational Agents.

"F. F. Franklin, Agent, has recently interested Mr. Knapp of Lake George, in protecting his white pine. This area includes about 8,000 acres.

"At present there are 9 crews working on private land, and 7 on State Land.

"The Agents have been increased to 10.

"Professor Prentice has recently started as Agent and will assist in establishing the new county organization plan in the different counties.

"Dr. H. H. York takes up his new duties as State Forest Pathologi July 1. He is to continue pathological work in this State, and become educational leader in charge of the educational work in this State.

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Mr. E. G. Schreiner received his appointment June 15 as Field Asst. Mr. Sherburn H. Fogg was appointed Aug. 23 as Agent. Mr. Orlin Magee resigned July 18.

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At the North Hudson Experimental Area.

Mr. Robert W. Putnam is in charge of the selective Ribes eradication work at North Hudson. He is assisted by Robert S. Carruthers, Thurston L. Corbett, Wilmer F. Lewis and E. G. Schreiner.

Mr. Filler reports that the telial stage os the rust was well developed on Ribes at North Hudson on June 23rd.

On July 31, Mr. Filler reported the eradication work on the Experimental Area was completed. Three men are now checking the study plots worked in 1921 and 1922 for Ribes and new pine infections. Some good data is being secured on Ribes regrowth, sprouting, etc.

- -

A clipping from the Gloversville and Johnstown Morning Herald of August 1 reports that the Water Board has voted $1000.00 to be used to fight blister rust on the Johnstown Watershed. Such good cooperation was secured through the activities of Mr. Burr N. Prentice and Mr. H. Knowles.

WISCONSIN

While the state legislature failed to make any specific appropriation for controlling the blister rust, sufficient funds have been found to continue the cooperative control work in the state.

The work on the Eau Galle Experimental Area is reported to be going on well under the direction of Mr. W. C. Thompson.

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MINNESOTA

Mr. Braden earlier in the year reported that: -

"Acting in cooperation with Mr. Aldrich, Carlton County Agric. Agent, there were established three demonstration woodlots, (pine), whereby owners will be taught thinning principles, blister rust control and how fast a woodlot grows (in board feet), and other principles of woodlot management.

"Investigation in the Floodwood district shows an average cash income this past winter of $750.00 per farm for 200 farmers for woodlot products, as against $350.00 per farm for dairy products the past 12 months. "

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Western States

Mr. Wyckoff has sent out a circular letter on June 16, a part of which is here quoted:

"The work which has been considered to be of greatest immediate necessity, and is, therefore, being carried on this year, falls under the following headings:-

"1. Enforcement of federal and state blister rust quarantines, to prevent the artificial spread of the disease. During the 1923 spring inspection season 91 violations of these quarantines were intercepted.

"2. Eradication of the cultivated black currant, the most active agent in the natural spread of the blister rust. Field parties are now engaged in this work in western Oregon, northeastern Washington, Idaho, and western Montana. It is expected to have the commercial western white pine territory free from cultivated black currants by the end of this field season. This work on the southern edge of the white pine range should be completed in 1924.

"3. Local control work in the Inland Empire. This consists of uprooting all wild currants and gooseberries in the white pine forests, thus breaking the life cycle of the disease, and preventing its spread. It is planned to begin this work in the extreme northern part of the Inland Empire, working southward in advance of the disease. The local control work now in progress on the Kaniksu National Forest will have to stop July 1st because of lack of funds. Advantage should be taken of the time before the disease reaches the Inland Empire from British Columbia to clear as much of the best commercial pine area as is practicable.

"4. Investigative work on the life habits of the fungus. Exact information on its habits under western conditions is necessary in order that we may intelligently fight it."

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A meeting of the White Pine Blister Rust Executive Committee was held in Moscow, Idaho on May 8, at which were present from the Department of Agriculture Mr. Detwiler and Mr. Wyckoff.

Arrangements were made for a trip May 14 to Daisy Lake, British Columbia and Forest Supervisors Koch, McHarg and Fitzwater of District 1, and Mr. Ames from Portland were present. Concerning this infection at Daisy Lake, Mr. Humiston, Secretary of the North Idaho Forest Association, writes:

"The region around Daisy Lake, British Columbia, is probably worse infected with White Pine Blister Rust than any other area in the West and possibly it is as badly infected as any area of equivalent size in the United States. This infection, as well as that at Beaton, British Columbia, is a constant menace to our White Pine in northern Idaho."

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Historical Western White Pine

The Office has just received a large photograph of the base of the Western White Pine Tree from which Fourth of July Canyon on Coeur d'Alene-Wallace Road, Idaho-Yellowstone trail was named. The Forest Service has made a public park of 160 acres around this tree. The photo shows the mark July 4, 1861 on the blaze, undoubtedly marked when the trail was being constructed. Photo 150067, by Forest Service, donated by Supervisor C. K. McHarg,

Ed. Are there any cultivated black currants or other similar pests near this tree?

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Western White Pine Stumpage Brings Good Figures

"About 70,000,000 board feet of timber within the Coeur d'Alene National Forest in northern Idaho has been sold at top-notch prices, according to a report of the Forest Service. The Ohio Match Co. was the successful bidder. The timber sold consists mostly of white pine, for which $11.40 per thousand board feet was bid. In addition to the money payments, however, the purchaser is to build a railroad 10 miles in length, which is to become the property of the Federal Government at the end of five years. This railroad will open up great tracts of timber which now lack transportation facilities."

(From the Official Record - U. S. Dept. of Agric., June 13, 1923.)

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Notes from the Washington Office.

Mr. S. B. Detwiler is still in the West working on national policy of blister rust control in that region.

Miss Florence Daniels took time out one day last month to get married, She is now Mrs. A. J. Lacovey.

A biweekly News Service has been started in the Office to supplement news items which the Agents may write for the press. Clip Sheets, 1 to 3, have already been sent out. These may be used by the field men in various publications as they see fit.

Mr. C. E. Randall resigned August 21 to enter private employ in the city.

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WHITE PINE

White Pine! With arms outstretched, uplifting,
Pointing to starry blue emblem of peace and order,
Under thy guiding arms, redmen, with eyes to see
And looking up, rose to genuine nobility.

White Pine! On ocean shore, beckoning across,
Cramped and tortured sufferers came, pilgrims,
Under the benedictive arms found freedom;
(Freedom to follow God,) Grew to noble stature.

White Pine! Material greed and blistering rust,
(Bolshevik trailing wolves.)now lay thee low.
Doomed, thy withering trembling arms, true faithful sentinel,
Wave warning to the native land - White Pine! "

By H. B. Ayres, Sec'y. Society for the Protection of N. H. Forests.
Quoted from The North Woods - (Minn.) September, 1922.

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Notes from the Office of Forest Pathology

Dr. Perley Spaulding and Miss Annie Rathbun have been working at Warrensburg, New York on the comparison of germination of telia from different Ribes. They are also working on different phases of the sporidia problem, particularly the longevity of these spores.

Dr. Ellsworth Bethel has completed the study of a zone of country in northern California with reference to a barrier to the southward spread of the rust. The country studied was not very promising for that purpose. Prof. Bethel had a severe spell of sickness, but is much better now and has returned to Denver.

Doctors Pennington and Boyce, and Mr. Lachman have been taking data in British Columbia on different phases of the disease on pine and Ribes. Dr. Pennington completes his studies in the northwest on August 31, after which he will resume his work in the State College of Forestry at Syracuse University.

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Editorial: There has been considerable discussion this spring in regard to automobile hire; and comments have been received that the federal limit of 7 cents per mile was unusually low. In this connection the mileage rates for hire of Ford cars in our western work last year amounted to 7.32 cents per mile for 58,018 miles of travel. This was for cars hired at from $75 to $100 per month, while the price of gasoline was from 25 to 60 cents per gallon.

It is also of interest to learn what the Massachusetts Commission on Administration and Finance has decided is a fair rate of compensation for private cars used in official business. The following clipping appeared in a recent Boston paper:

"STATE EMPLOYES' CAR EXPENSE CUT

Will Get Only 6 Cents a
Mile on all Cars

"Wails of mourning and disapproval went up at the State House yesterday, when the new commission on administration and finance announced a policy which will compel many a state employe to pay for his own gasoline in the future.

"Heretofore the state has permitted employees to use their own automobiles on official business, allowing 10 cents a mile for Fords, 12 cents a mile for other cars costing less than $2000, and 15 cents a mile for cars costing more than $2000. Hereafter every state employe, whether he travels in a Ford or a Rolls-Royce, will get six cents a mile and no more, and if they do not like it, Chairman Homer Loring points out that the steam railroads still carry passengers for less than four cents a mile.

Insist They Lost Money

"The policy is in line with others announced by the commission since it began to operate last December, and as in all former cases the protests were loud, some of the employes affected insisting that even at the higher rates they were losing money, but were reconciled to that because of the additional comfort and convenience which the automobile afforded.

"They contend that the commission could not hope to save more than $50,000 a year, or about one-tenth of 1 per cent, of the state's annual expenditure, but the commissioners could see no logic in that argument which, they held, might be applied to every leak which they have stopped during the year.

"In the official announcement Comptroller McCormick said that 415 automobiles, privately owned by state employes, were used for official business last year at a cost to the state of $100,000. Investigation had shown that the cost of running small cars, exclusive of garage hire, which the commission did not feel the state should pay anyway, was not more than six cents, and on the ground that the man who uses a larger car for his own comfort or pleasure should pay for it, six cents a mile was fixed as a flat rate.

"Chairman Loring said that he expected protests but would not be budged by them.

"'Under the old rates,' he observed, 'it would be quite possible for a state employe to buy a car, use it in the business of the commonwealth, and on the allowance given pay for the car without using a penny of his own.'"

UNITED STATES DEPARTMENT OF AGRICULTURE

Bureau of Plant Industry

Washington, D. C.

Blister Rust Control October 1, 1923.

The Blister Rust News, Vol. 7, No. 4.

(Confidential, not for publication)

. . . . . .

Eastern States

MAINE

Mr. W. O. Frost in a recent letter suggests the use of the men in the U. S. Veterans Bureau. He writes -

> "I wonder if other states are taking advantage of the U. S. Veterans Bureau, using some of its men who are attending forestry schools? Recently we received a letter from the Sub-District Manager of Bangor, who desires to place four men, now forestry students at University of Maine, on forestry work during August and September. His letter says, 'these men are paid a salary by the U. S. Government and all we would ask from you or your foremen would be intelligent supervision in their tasks. These men would work the same hours as your crew, and work as a part of your crew with no favoritism to be shown in any manner.'"

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Mr. Thomas S. Forsyth, Washington correspondent of the Portland (Me.) Evening Express and Advertiser, has given considerable publicity to the blister rust control work this year. On August 28, his article was entitled "Better Sacrifice Currants and Gooseberries than Lose White Pine Trees."

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NEW HAMPSHIRE

Notes from Thomas L. Kane for Grafton and Coos Counties:

> "Miss Gwendolyn McMeekin, a Junior at Woodsville High School, won a certificate for her essay on Blister Rust. She came into the office on two occasions and I gave her some coaching.

N. H. Cont'd.

"Have three Boy Scout organizations in Grafton and four in Coos counties. During the fall, winter and early spring we went on hikes every Saturday and put in considerable time studying the forests. It is rather difficult getting them together in the summer as they can find plenty to do on the farm. However, we have our schedules ready beginning in September. This work, or rather play, is fascinating to me as the youngsters are quick to learn and get as much enjoyment out of it as I do.

"Some of my worst infected areas are along the State highway. In order to bring Blister Rust to the attention of autoists and reach out of state folks as well as residents of N. H., I have posted signs, with the permission of the owners, and invited them to look over the property. Going a little bit further I have strung up infections on the posters."

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The Value of Exhibits at Fairs.

"You may be interested to learn that while it is difficult to gauge the extent of the benefits derived from placing white pine blister rust exhibits at fairs, events occasionally conspire to prove to us that our efforts have not been in vain.

"In August, 1922, 'Bill' Cullen placed an exhibit at the Rochester Fair in his county. While 'Bill' was explaining the disease to a number of interested parties gathered around his exhibit, one of the leaders of a N. H. community of Shakers chanced to see the exhibit and drew nigh. During the course of 'Bill's' talk this man heard him say that the State would do work on private estates providing the owner paid the cost. He left his name with Cullen who promised that someone would see him.

"The estate of this particular body of shakers is situated in Merrimack County and 'Bill' consequently turned his name over to me. I visited the gentleman, examined the estate, advised the eradication of currant and gooseberry bushes and received their check for $1,000.00 to defray the necessary expenses connected therewith. The extent of their area is 2,050 acres.

"Much of the success I had in lining up appropriations by towns this year can be charged to exhibits placed, not only in my county, but in other counties throughout the State, and I believe this to be true of other counties. Interviews with individuals have proven this fact conclusively."

Thos. J. King.

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N. H. Cont'd.

Automobile Costs in New Hampshire.

Data has been recently compiled in the Washington Office on the automobile mileage costs for eight blister rust control agents in New Hampshire for the months of May, June and July, 1923. The total cost for gas and oil amounted to $756.91, for rental $1,168.00, making a total cost of $1,924.91. The total distance covered amounted to 34,121 miles. This makes an average cost for operation of 5.64¢ per mile. What state can beat this average?

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Mr. Filler, in a progress report dated August 6, 1923, gives the following summary concerning the New Hampshire work.

> "July 17 Corliss reported the work in 26 towns had been completed for the season on about 85,000 acres, and estimated a total of 300,000 acres for the season in the ten districts. About 25-30 crews have been maintained throughout the season. About 100 local leaders have been selected. These proved very helpful in securing town appropriations for the work."

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VERMONT

Mr. Filler, under date of August 6, sends in a batch of news for Vermont, as a result of his visit to that State. Mr. Rose has secured 75 cooperators, 34 of whom have already cleaned up 4,000 acres. Mr. Holden has completed work on the land of 28 cooperators, having an area of over 4,600 acres. Mr. Bradder has also been securing good cooperation from pine owners.

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MASSACHUSETTS

Massachusetts now has six agents in the field. Mr. Wallace Black resigned on June 30, Mr. Edward McNerney, forester from Washington, taking

Mass. cont'd.

his place. Mr. Roop, in Essex County, has already cleaned up four towns this season. About the first of August he had three scouts and one or two crews working, most of the time on private work.

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One of the cooperators in western Massachusetts, in commenting on the work of Ribes eradication on his place, wrote on August 13 as follows, to Mr. Dickey.

> "Before me I have a report covering the gooseberry and currant eradication work on Lone Pine Farm. May I express my personal appreciation of the intelligence and energy with which this work has been conducted. I am sure that the remedial and preventive measures taken will be of great value to us in future years."

In a letter to his superintendent this cooperator wrote concerning the above work. "One has an increasing respect for some of our Governmental departments after seeing operations such as those conducted under Mr. Dickey."

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RHODE ISLAND

Mr. O. C. Anderson, under date of September 25, writes:

> "The Rhode Island Blister Rust crews have eradicated over 8,000 Ribes on 15,000 acres in three townships to date. It is planned to maintain the eradication crew until the last part of October in the field, the removal of cultivated bushes not being interfered with by the recent frosts that caused the leaves of the wild varieties to fall. The cooperation of the farmers in the removal of these cultivated bushes is splendid."

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CONNECTICUT

Mr. Alfred D. McDonnell, under date of September 24, writes that he is so busy on blister rust control that he hardly has time to send in the

Conn. cont'd.

news. However, witness the following from his pen:

"The Town Meeting days for Connecticut come a week from today and I'm about breaking my neck getting folks in three towns tuned up for the meetings.

"It might possibly be of interest to say that one farmer donated his tractor to help pull up his cultivated bushes, as some of the plants stood 5 - 8 feet tall. Probably that is a common enough form of eradication in the other New England States, but here in Connecticut it is very ultra modern."

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NEW YORK

Mr. Fivaz, under date of August 28, writes:

"The exhibit last week at the Westport Fair, Essex County, was a huge success, undoubtedly the biggest single stroke of publicity accomplished there. Nichols, York, and Prentice were in attendance, Keib came over for a day or so. Enough requests for inspection were received to keep an Agent busy for over a month. The portion of the exhibit attracting the most attention was a large county map showing the towns. From each town a red ribbon led to a blister rust specimen from that town, these specimens being arranged in an oval around the map, the whole outfit mounted on beaver board probably 4 x 9 feet in size. Under each speciman for each town was given the location as related to roads and streams where the rust was found, as well as the total area of the township, the pine acreage of each township, and a round guess of the infection percent in each. This idea will undoubtedly be worked up this winter for each of the other counties, for use at any exhibits.

"The Gloversville Fair last week was also very successful, Knowles reports contacts that will keep him busy for a month. He has one crew on the Johnstown Waterworks, starting another there this week, and he has two others working in Gloversville. Knowles has enough work ahead for two more crews, but there is some doubt that they will be organized so late in the season.

"Last week Harpp exhibited at Ellenville (Ulster County), this week Rhinebeck(Dutchess) and next week at Chatham (Columbia). Miller this week at Ballston Spa. - Franklin is assisting him. Keib will be at Lowville Fair."

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The Conservation Commission has printed a large card, 10" x 12", with

N. Y. cont'd.

black letters on orange, the wording of which is given below.

R E W A R D

$1000

TO ANY INDIVIDUAL WHO WILL PROVE THAT

BLISTER RUST

WILL NOT SPREAD FROM

CURRANT OR GOOSEBERRY BUSHES

to

WHITE PINE

For further information write Conservation Commission, Albany, N. Y., or apply to Farm Bureau Agent.

MICHIGAN:

Mr. D. V. Baxter was again in charge of the Michigan blister rust work this season, commencing his educational and scouting work on July 1.

Mr. Baxter has been successful in turning up the blister rust in a state where it takes real scouting to find any trace of the rust.

The wild gooseberry, Ribes cynosbati, was found diseased in western Michigan July 13, 1923, for the first time in the history of the work. The bush was near the white pine plantation of J. B. Martin near Ada, where Mr. Baxter first found diseased pine in 1922. Two more pines were found infected in this plantation in 1923. The plantation was made with French-grown stock of white pine in 1908. On August 14, Mr. Baxter had an interesting and successful meeting with the County Agents at the Experimental

Mich. Cont'd.

Farm in Chatham. Mr. Baxter spoke on the subject of "Farm Practices and the Blister Rust". Much interest was shown by the Director of the Station, as well as by the County Agents.

A note by Mr. Baxter concerning black currants is significant. "I arrived at Houghton yesterday. In scouting through this copper section (Upper Peninsula) I am finding that black currants are very abundant. The mines are worked by Finns and other old-world people."

From August 31, for a period of 10 days, the State Fair at Detroit was in session. Baxter attended the fair, with a good blister rust exhibit, which attracted considerable attention.

On September 30, Mr. Baxter resigned to resume his research in Forest Pathology work in the Botanical Department of the University of Michigan.

Blister Rust Exhibit Appreciated

Mr. E. C. Mandenberg, of the Michigan Department of Agriculture, wrote Mr. Baxter recently:

> "We were glad to have your White Pine Blister Rust Exhibit as a part of our exhibit at Detroit and Grand Rapids and I wish personally to express my appreciation for your cooperation in putting on both these exhibits."

A box and panel exhibit has recently been sent to the Kalamazoo Fair at the request of Messrs. Mandenberg and Baxter.

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WISCONSIN

A published report on the White Pine Blister Rust appears in the Biennial Report of the Wisconsin State Department of Agriculture for the years 1921 and 1922, on pages 72 to 76.

Quotations from this report are here given:

Wis. Cont'd.

WHITE PINE BLISTER RUST

"During the current year (1922) a decided decrease in number of new infection centers of blister rust, as compared with former years, was an outstanding feature. Only one of the six new spot infections found is of a serious nature. This is on the border of Dunn and Eau Claire counties, on Big Elk Creek, about seven miles west of Eau Claire. The center of infection comprises an area about ten rods wide and eighty rods long, in which approximately one hundred blister rust cankers on branches and stems of white pine were located. Surrounding this area is a tract of white pine and hardwood about two miles in length and from one-fourth to one-half mile in width along the creek."

Progress of Control Operations

"Although white pine blister rust is strongly established in the north-western part of the state, and there is practically no hope of exterminating this fungus, it is gratifying to know that our present control measures are decidedly effective. In Polk and Burnett counties, where the disease was found so abundantly in 1919, the number of gooseberry and currant bushes found infected in 1922 is comparatively small. The areas containing the chief white pine stands in these counties have been freed of gooseberry and currant bushes, reducing the danger of having such large infections to contend with in the future.

"Conditions in St. Croix county have improved as the destruction of diseased pines near Deer Park has resulted in checking the spread of the disease. During 1921 the Ribes bushes were removed from the best stands of pine, but there is still a considerable amount of Ribes eradication work to be done in order to stop the progress of the disease in this locality.

"It was found that the disease at Reserve is not entirely eradicated. One white pine and a number of gooseberry and currant bushes were found to be infected one-fourth of a mile east of the former control area, all of which is on the Court Oreilles Reservation in Sawyer county and is under the supervision of federal authorities.

"During the season of 1922, two trips were made to Shawano county, but no infections were found at Keshena (where control measures were formerly applied), nor in other parts of the county.

"Another important part of the campaign was the location of a considerable number of farm woodlots containing white pine, especially in Dunn and Shawano counties, not formerly reported. It was also found that landowners are much more interested in their pine than was formerly supposed. On the whole, farmers and woodlot

Wis. Cont'd.

owners are anxious for assistance in protecting their holdings against blister rust and are more than willing to do their share of the work.

"It is the plan for the next season to continue eradication of gooseberry and currant bushes in scattered localities on the cooperative basis with farmers in Polk, Burnett, and St. Croix counties.

The National Blister Rust Situation.

"Wisconsin is in a peculiarly fortunate condition, as blister rust does not seem to be spreading here faster than it can be controlled. This is in marked contrast with the situation in both New England and the Pacific Northwest, where the disease is already causing extreme losses. Infection is prevalent throughout all of the New England states, involving over 10% of the pine covering extensive tracts."

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Mr. W. C. Thompson, writing in July of the Eau Galle Experimental Area, stated that "An eradication crew of six men completed the eradication of the 3,100 acres in the area on June 30, going over 559.3 acres in 3 weeks and pulling 24,428 bushes (an average of over 52 bushes per acre).

"A data crew of 3 men took notes on the Ribes removed, and on the time and cost for various types of land. At present, two men and myself are making measurements on the permanent plots of the area, which deal with such studies as these:

(1) Growth of Ribes in different types of shade conditions.
(2) Necessity for second eradication.
(3) Root and stem sprouting and layering.
(4) Hand vs Pick Ribes eradication.

We also have crew experiments dealing with:

(1) Methods of laying trail.
(2) Spacing of men in line.
(3) Speed of crew.
(4) Eradication tools.
(5) 1-2-3 men crews.
(6) Checking methods.
(7) Lost motion studies.

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Wis. cont'd.

Western States

GENERAL

Reforestation Dependent on Blister Rust Control.

The Spokane Spokesman's Review of September 15, 1923, reports on the reforestation investigation before the McNary Committee. Quoting from the news article:

> "Dr. Henry Schmitz of the school of forestry, Moscow, said reforestation efforts will be doomed to failure unless the white pine blister rust menace is eliminated. He reviewed the spread of the pest, which may reach Idaho forests in another year or two. He asked federal aid in tearing up black currant and gooseberry bushes, which act as hosts to the pest."

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Mr. S. N. Wyckoff reports in his September News Letter:

> "Rapid progress is being made in the eradication of cultivated black currants in our Northwestern States. This work will be completed in northern Idaho, northeastern Washington and northwestern Montana this year. The absence of these most active intermediary host plants will prevent long jumps and retard the progress of the disease into the Inland Empire pine region of the United States, but will not prevent its slower spread through the medium of wild currants and gooseberries adjacent to the international boundary. Destroying the cultivated black currants is the first effective step in controlling the disease. The second step is the systematic protection of pine stands through local control."

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In a later report, for the period September 15 to 30, Mr. Wyckoff furnishes the following summary:

1. Cultivated black currant eradication. Additional work on cultivated black currant eradication has been carried on in the northwest. To date the following eradication work has been accomplished.

Idaho 352 plantings, 1607 plants.
Montana 307 plantings, 1362 plants.
Oregon - - - - - - , 30,162 plants.
Washington 286 plantings, 1483 plants.

In Oregon, preparations are now being made for a school campaign to locate cultivated black currants in portions of the state, where the eradication is incomplete. The material for this school campaign will be sent out during October.

2. Scouting for the disease. Previous to September 15, scouting for the disease in eastern Washington had resulted in infections being found at 8 points in the vicinity of Oroville, Loomis, Tonasket, Molson, and Chesaw, all in Okanogan County. Since that date, a field party has inspected all cultivated black currants and many other cultivated and native Ribes in the valleys of the Okanaogan, Columbia and Yakima rivers, south to the Oregon line. No further infections were found in the course of this work.

Scouting in Ferry County resulted in infection being found on the two remaining plantings of cultivated black currants at Danville. No other infections were found in this region.

At the present time a more intensive and extensive program of scouting for the disease is under way. Three parties are in the field and will carefully scout the drainages of the Columbia and Pend Oreille rivers in northeastern Washington, the Kootenay and Moyie rivers in northern Idaho, and the Yaak, Kootenay, Stillwater, and Flathead rivers in northwestern Montana. This work will continue until the Ribes leaves fall, making scouting inefficient.

3. Inspection for violation of blister rust quarantines. Fall inspection work to detect violations of blister rust quarantines will be started at Spokane, Portland and Seattle about October 5th, and at Pasco and Pendleton as soon as the scouting season is over.

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IDAHO

At the beginning of the season, the Executive Committee for Idaho recommended the following rates for reimbursement for cultivated black currants destroyed:

Healthy plants given voluntarily	5¢ each
Fruiting plants, 4 yrs. of age and over, in good state of cultivation	50¢ each
Fruiting plants, 2 - 4 yrs, in good state of cultivation	35¢ each
Fruiting plants, run down by age and lack of care	25¢ each
Neglected plants	5¢ each.

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OREGON

An act declaring the cultivated black currant (Ribes nigrum) and the common barberry (Berberis vulgaris) a public nuisance and providing for their eradication was approved by the Governor on February 14, 1923. Section 2 of this Act is as follows:

Oregon cont'd.

"Section 2. It shall be unlawful for any company, corporation, society, association, partnership or any individual or combination of individuals in the State of Oregon to grow, propagate or distribute cultivated black currants (Ribes nigrum) or common barberries (Berberis vulgaris).

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WASHINGTON

The following is the Record of Infections Found in Okanogan Valley, Washington, by Messrs Root and Bach.

Aug. 29, 1923.
Cronartium ribicola on cultivated black currants (2 bushes infected 25%, two bushes in planting) found at the Wentworth property in Loomis, Washington.

August 30, 1923.
Cronartium ribicola on cultivated black currants, W. L. Clark place, at Oroville, Wash. 5 infected in 59 bushes.

September 6, 1923.
Cronartium ribicola on cultivated black currants at Tonasket, Wash., on the J. D. Moore ranch, 1 mile north on main road to Oroville. 3 bushes infected out of 8.

September 7, 1923.
Cronartium ribicola on cultivated black currants at E. I. Schock's place, 2 miles east of Tonasket, on Havillah road. One bush infected out of a total of one.

September 7, 1923.
Cronartium ribicola on cultivated black currants, J. W. Lind's place 2 miles northeast of Chesaw on Lost Creek, Chesaw, Wash. 25 bushes infected out of a total of 28. Only a few infected leaves on about 10 bushes.

September 8, 1923.
Cronartium ribicola on cultivated black currants at E. H. Henning's place, Strawberry Hill Road, northwest of Chesaw, Wash. 2 bushes slightly infected out of a total of 12.

September 8, 1923.
Cronartium ribicola on cultivated black currant at Molson, northwest of Chesaw about 4 miles on the Strawberry Mountain close to the British Columbia line, on R. C. Hirst ranch. 1 bush infected in 79.

September 8, 1923.
Cronartium ribicola on cultivated black currants at Chesaw, Wash., on the G. F. Horning place in north end of town. 2 bushes out of 4

Wash. cont'd.

infected, also 4 leaves on white currant infected close to infected black currant (touching)

All of the above bushes were in Okanogan County, Washington. The cultivated black currant mentioned in each case is Ribes nigrum.

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Blister Rust Situation in Western Canada.

BRITISH COLUMBIA

Mr. J. S. Boyce of the Office of Forest Pathology, visited Mr. A. T. Davidson, Officer in Charge of Blister Rust Control in British Columbia, on August 21 at Vancouver.

Mr. Boyce writes concerning the distribution of blister rust in Eastern British Columbia.

"According to A. T. Davidson, infection on pines has been found at three places only - where infection was also found last year. At Canoe there were 18 trees with a total of 25 cankers on 1917-1921 wood, at Revelstoke 41 trees with a total of 49 cankers on 1917-1921 wood and at Beaton 14 trees with 20 cankers on 1917-1920 wood. This last point is at the head of the Arrow Lakes. The small number of infected trees, the relatively few infections per tree and the age of the wood on which the cankers are found, further confirm our opinion of last year that this infection in eastern British Columbia is of recent origin and apparently a natural spread from the heavy infection north of Vancouver. The Dominion authorities are destroying all infected pines in eastern British Columbia as found.

"Ribes lacustre was infected at Revelstoke and Canoe, in the immediate vicinity of infected pines, but at all other places the rust is confined to the English black currant (R. nigrum). So far the disease has not yet appeared in certain localities, where it occurred last year. On the other hand, two important localities with infection have recently been discovered. One of these is at Nakusp and the other at a point about 5 miles north of Burton. Both places are on the Arrow Lakes, considerably south of Beaton (the southermost infection of last year). The infection in both places was on the English black currant.

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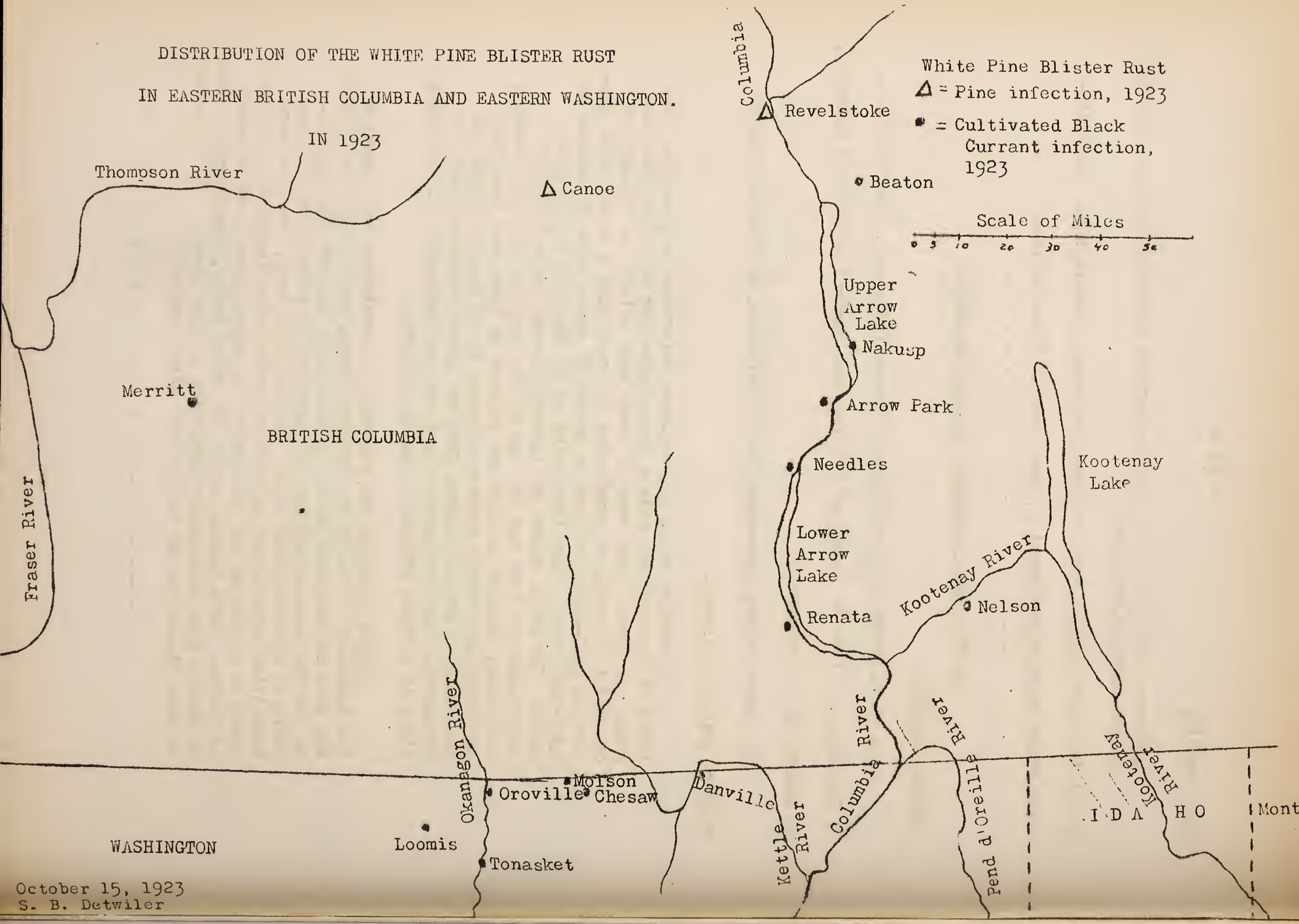
DISTRIBUTION OF THE WHITE PINE BLISTER RUST

IN EASTERN BRITISH COLUMBIA AND EASTERN WASHINGTON.

IN 1923



October 15, 1923
S. B. Detwiler

British Columbia cont'd.

Mr. S. N. Wyckoff wired on August 25th that Mr. Davidson reports black currants infected at Burton, Nakusp, Arrowpark, Grahams Landing, Carroll Landing, Needles and Farquier, in British Columbia.

On October 11, 1923, Mr. Wyckoff wired that blister rust had been found on cultivated black currants at Nelson, B. C. only 35 miles north of the international boundary at a point where it is intersected by the Idaho- Washington line.

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Federal Attitude Towards Cultivated Black Currant.

Dr. W. A. Taylor, Chief of the Bureau of Plant Industry of the U. S. Department of Agriculture, in a letter of September 7, 1923 to Mr. G. H. Hecke, Director of State Department of Agriculture of California, presented the following facts which make necessary the eradication of the cultivated black currant.

> "White pine blister rust is a destructive fungus disease of foreign origin, introduced into the United States in recent years. It attacks and kills eastern and western white pine, sugar pine, and other five-needle pines.
>
> "This rust must first grow on the leaves of currant and gooseberry bushes before it can attack the pines. Cultivated black currant is the most susceptible and the most active agent concerned in the long-distance spread of the disease.
>
> "The United States Department of Agriculture recognizes the cultivated black currant as a distinct menace to forestry (hence also to agriculture) in the United States. It is so serious a menace to American forestry in all states where white (five-needle) pines occur as to make it a public nuisance in those states. The Department deprecates the growing of this species of currant (Ribes nigrum) anywhere in the United States, and recommends that state authorities take active steps to secure its elimination from California, Oregon, Washington, Idaho, and western Montana, as well as from the Atlantic and Lake States.
>
> "The growing of cultivated black currants in home gardens, as well as in nurseries and commercial plantings, should be entirely abandoned throughout these states because of the great importance of the native and planted white pines, and the comparatively small economic value of the cultivated black currants.

There are some individuals to whom the loss of cultivated black currant will mean a measurable sacrifice. The menace of the blister rust to our white pine forests necessitates this sacrifice in the regions named, since in no other way can the spread of the rust be checked. The white pines are a great national asset, essential to forestry development in this country. They can be saved through united action."

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Notes from the Office of Forest Pathology.

Dr. Spaulding and Miss Rathbun working at Warrensburg, N. Y. are finding some of the sporidia much longer lived than previously supposed.

Dr. Metcalf has just returned from Great Britain. Only incidental examination was made of blister rust in Great Britain as conditions there had been studied by Moir and Spaulding.

Dr. Boyce gave a talk last month on blister rust at the meeting of the American Association for the Advancement of Science at Los Angeles, California.

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Publications

BLISTER RUST

General

Anonymous. Report of the Proceedings and Recommendations of Eighth Annual Blister Rust Conference, held in Boston, Mass. February 8, 9 and 10, 1923. Mimeographed. Washington, Office of Blister Rust Control, 126 pages.

S. B. Detwiler. Status of Blister Rust Control 1921-22. Plant Disease Survey Bulletin. Supplement 23, Aug. 25, 1922. pp. 439-442. Wash., D. C.

S. B. Detwiler. "Spare the Currant and Spoil the Pine." How the little currant bush, one-time neighborly neighbor of the white pine, is harboring a traitor of the forests. American Forestry. Vol. 29, No. 354. p. 337-340, June, 1923.

W. A. Taylor. White Pine Blister Rust. In Report of the Chief of the U. S. Bureau of Plant Industry, for the fiscal year ending June 30, 1922. Oct. 12, 1922. p. 190-2.

Blister Rust, cont'd.

Idaho

Henry Schmits. The Present Status of White Pine Blister Rust in the West with Special References to the White Pine in the State of Idaho. The Idaho Forester, Univ. of Idaho. Forest Club Annual, Vol. 5, 1923, p. 25-28.

Maine

Anonymous. White Pine Blister Rust Control. Quarantine on Currant and Gooseberry Bushes and White Pine Trees.
In the Forest Manual, 1922, Maine Forest Service, Augusta, p. 92-96.

S. T. Dana. White Pine Blister Rust Importance and Control. Progress in 1921 and 1922. In Biennial Report of Land Agent and Forest Commissioner 1921-22.

Massachusetts

C. C. Perry. White Pine Blister Rust in Annual Report of the Commissioner of Conservation and State Forester for the year ending Nov. 30, 1922. p. 17-18.
Gives a brief resume of the work of the past year. On Jan. 1, 1922, the disease had been found in 296 towns, in 92 of which infections were on pine. Since then pine infections have been located in 32 additional towns making a total of 124.

C. C. Perry. White Pine and Blister Rust. Parks and Recreation. Vol. 6, No. 6, p. 521-528, July-August, 1923.

Michigan

D. V. Baxter. White Pine Blister Rust in Michigan. Phytopathology. Vol. 13, p. 285-286, June, 1923. This gives a short summary of the infections found in the state from 1917 to 1922 with notes on the white pine.

New Hampshire

Anonymous. Control of the White Pine Blister Rust. In Reports of N. H. Forestry Commission for the two Fiscal years ending June 30, 1922. Concord, Nov. 1922. p. 46-58. This is an exceptionally good state report, and merits being published as a separate, since in this way a large edition could be printed for general use in the state.

Blister Rust, cont'd.

New York

A. F. Amadon. White Pine Come Back in New York State - Blister Rust Chief Menace, Easily Controlled. Lumber World Review, Nov. 10, 1922.

Clifford R. Pettis. White Pine Blister Rust in 12th Annual Report for the year 1922 of the N. Y. Conservation Commission. 1923, p. 178-180.

Washington

Anonymous. Look to Your Currant Bushes. Univ. of Washington Forest Quarterly. Vol. 1, No. 3, October, 1922. Further reports of the spread of the blister rust in Washington are noted.

J. W. Hotson. Blister Rust - A Menace to Posterity. The Univ. of Washington Forest Club Quarterly. Vol. 1, No. 2, Seattle, p. 18-25, June, 1922.

QUARANTINES

C. L. Marlatt. "The Pine Blister Rust." In report of the Federal Horticultural Board Oct. 1, 1922, pp. 9 and 10.
This gives a resume of the federal quarantine work. In the enforcement of this quarantine (#26), 70,180 shipments of nursery stock were examined for blister rust host plants during the past year. There were intercepted 135 shipments in violation of the quarantine, 93 percent of which were returned to the consignor and the remainder disposed of by consignee or State Official.

Miss Maude A. Thompson of the Washington Office has just completed the compilation of "General Requirements for Interstate Shipment of Nursery Stock" for all states, which appears as Table 1. Table 2, which gives a Digest of Federal and State Quarantines Governing the Movement of Nursery Stock to other states has been compiled for each state separately.
This work has been done in cooperation with the American Association of Nurserymen. The distribution of Tables 1 and 2 is being handled by the State Nursery Inspection Officials. Miss Thompson is to be congratulated upon the completion of these tables, which will be of great value to nurserymen as well as to others interested in shipment of nursery stock.

RIBES

Ellsworth Bethel. Rusts Occurring on Ribes in the West. Published in mimeograph form with The Ribes of Washington, The Ribes of the Inland Empire and The Ribes of the Sugar Pine and Western White Pine Region of California, by Stephen N. Wyckoff.

Ribes, cont'd.

8 rusts occur on Ribes, include 4 Puccinia, 1 Melampsora, 1 Coleosporium and 2 Cronartium (C. ribicola and C. occidentale)

Stephen N. Wyckoff. The Ribes of Washington. Multigraphed 37 pages, and 18 pen and ink drawings of species. 1922. Washington Office of Blister Rust Control.

S. N. Wyckoff. The Ribes of the Inland Empire. Mimeographed - 18 pages and 13 pen and ink drawings. 1923. Wash. Office of Blister Rust Control.

S. N. Wyckoff. The Ribes of Sugar Pine and Western White Pine Region of California. Mimeographed. 14 pages and 9 pen and ink drawings. May 15, 1923. Wash. Office of Blister Rust Control.

Each of the three publications on Ribes give Keys and Descriptions, Habitat and Distribution.

WHITE PINE

J. H. Faull. Needle Blight of the White Pine. In article on Forest Pathology in Relation to Forest Conservation. 14th Annual Report of the Quebec Society for the Protection of Plants. 1921-1922. Quebec, p. 15-18.

H. B. Peirson. White Pine Insects. In "Insects Attacking Forest and Shade Trees." Bulletin No. 1, Maine Forest Service, pp. 30-46. This is a very helpful contribution to the subject. It is divided into 3 main headings, - Insects Attacking Seedlings, Insects Attacking Sapling Pine, and Insects Attacking Mature Trees.

J. R. Simmons. Community Forests in 12th Annual Report for the year 1922. N. Y. Conservation Commission, 1923. p. 42-46. Gives data on the yield of white pine in 5 plantations.

UNITED STATES DEPARTMENT OF AGRICULTURE

Bureau of Plant Industry

Washington, D. C.

Blister Rust Control December 10, 1925.

The Blister Rust News, Vol. 7, No. 5.
(Confidential, not for publication)

. . . . . .

EASTERN STATES

MAINE

Mr. L. W. Hodgkins, reporting on pine infection in Maine during the past season, stated that,

> "Infections are to be found on pine everywhere where there are Ribes and in some cases the percentage runs high. On the property of Mr. Roger Gowell, Poland, there are about 4 acres of young pine averaging 20 years old which have from 15% to 50% infections, 1911 to 1919 origin. In the same town on the property of Mr. Ricker, a new infection area was found; and I should say that at least 50% of all the pines were diseased, on approximately four or five acres. These infections are of recent origin. "Wild gooseberry bushes were the infecting Ribes in each case. The crew was at work here eradicating and I had the opportunity to see the men in action and rate the quality of the work, which was very satisfactory."

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Strip Line Surveys in Maine.

A resume of blister rust conditions in Maine, as told by strip line surveys, follows:

On the Brunswick - Farmingdale - Woolwich strip line of 38.5 miles, in Cumberland and Sagadahoc Counties, run in 1920, equivalent to an area of 77 acres, 7,046 pines were examined. 6.3% of these pines were infected with blister rust. 11 plots along this line, which were examined at the same time, covering 2.75 acres and 970 pines, showed 14.4% of the trees diseased.

Maine cont'd.

A strip line survey near Augusta, one mile long and one rod wide, covering 2 acres in extent, was run in January, 1921; on this line there were 702 trees examined, of which 8.25% were infected. When the pines on this line were reexamined in November, 1922, 11.70% were found infected.

At Springvale, in York County, a rod-wide strip line, 1/4 acre in area, was run through a 5 acre patch of young pines in 1921. This showed 46% of the pines infected and an additional 6% killed by the rust. In 1922 an examination of this same strip showed 24% of the trees killed and 28% dying from the blister rust.

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Blister Rust Extending Northward in Maine

Mr. Frost, under date of November 24, writes:

> "I have just returned from a few days scouting trip up north and had very little difficulty in locating diseased pine all along the line to the village of Jackman, on the Canadian Pacific Railway, Township 4, Range 1. This is the farthest north I have been as yet. This point is about fifteen miles from the Canadian line." Jackman is about 178 miles north of Kittery Point.

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New Set of Lantern Slides

A collection of lantern slides has been sent Mr. Frost from the Washington Office, including 17 slides showing plantations, thinnings, pruning, natural reproduction, and old mature growth. Duplicates of these can be had by writing the Washington Office.

NEW HAMPSHIRE

Field blister rust demonstrations in New Hampshire are well advertised. See the following circulars sent out to interested persons in Merrimack and Rockingham counties. Material of this sort will give the agents new ideas to apply to their particular local problems.

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Plant Industry
in cooperation with

Merrimack County Farm Bureau New Hampshire Forestry Department

WHITE PINE BLISTER RUST DEMONSTRATION

Place: Blodgett's Landing - Newbury, N. H.

Time: October 24th, 1923 - at 2 o'clock.

****

One of the most severe infections of White Pine Blister Rust in this County is located at Blodgett's Landing.

Come and see what Blister Rust has done to the pines in this tract.

This is a chance to learn about the proper methods of controlling the Rust.

****

Mr. J. H. Foster, State Forester, is to be present, and he will be pleased to discuss with you problems in regard to forest planting, thinning, the Seed Tree and Walker laws.

****

This meeting is being held for your benefit. It will be to your distinct advantage to attend. Others have found these meetings to be worth while.

Don't Come Alone! Bring Your Neighbors With You!

Help Make it a Big and Successful Meeting!

Thomas J. King

Concord, N. H.
October 17, 1923.

Blister Rust Agent
Merrimack County.

CO-OPERATIVE EXTENSION WORK
In Agriculture and Home Economics
State of New Hampshire

New Hampshire College of
Agriculture and the Mechanic Arts
U. S. Department of Agriculture
And the Rockingham County
Farm Bureau co-operating.

Extension Service
County Agent Work

Exeter, N. H., October 5, 1923.

What: Forestry Field Demonstration

When: Saturday, October 13, 1923 at 3:00 p. m.

Where: One-half mile from Danville Center on Sandown road on woodlot of Colby Bros.

An Opportunity: To visit one of the best pine growing sections in the county.

To hear and meet the State Forester, Mr. Foster.

To hear and meet men who understand the woodlot problem.

To learn more about your pine lot as a crop.

To find out what methods should be adopted to realize good returns from your pine lot.

To ask questions that may help solve your woodlot problem.

To meet other pine owners and exchange ideas.

REMEMBER: The place, date, time, and to be there.

"It is an opportunity." Invite your friends.

Very truly yours,

J. A. Purington, County Agric. Agent

K. E. Barraclough, County Blister Rust Agent.

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Editor.

The above is a good illustration of effective cooperation between the county agricultural agent and the blister rust agent.

Damage Study Plots Being Formed.

Study plots are being laid out in each county to obtain local data on the rate of pine infection, the amount of damage, and the effectiveness of Ribes eradication. In New Hampshire, under the direction of Mr. W. J. Endersbee, the first plot was laid out and completed at Nottingham, in Rockingham County. A blue-print chart, approximately 18 x 24 inches, has been made for this area, the main point brought out in it being a diagramatic representation of the rate of spread of the disease from 1916, when 100% of the pines were healthy, to 1923, when 50.6% were healthy, 14.1% dead and 35.3% dying. Mr. Fivaz with the assistance of the agents, has collected data on three similar plots in Vermont, one in each agent's territory.

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Mr. Thos. J. King edits a Forestry Page in the Merrimack County, Farmers' Bulletin. The titles of the articles appearing in three of the numbers are as follows:

July Number: The Story of My Woodlot - by Robert Gould.
Blister Rust Eradication.

August Number: Put Your Worn Out Pastures to Work.
Blister Rust Eradication.
It Pays to Remove the Hardwoods from Young Growing Pines by Erwin J. Flanders.

Sept. Number: "A Trip Worth While" with the blister rust agent - by R. B. Robinson.
Blister Rust in Sutton.

These articles have a special appeal, since they are of local interest, and some are written by men living within the County. The woodlot practices described are simple in nature and may be followed by anyone familiar with working in the woods. They include the removal of birch over young pine, the removal of old scraggly pines or hardwoods which are overtopping young trees, the planting of waste land and openings in the woods, and the removal of currants

and gooseberries to protect the pine from the blister rust.

Editor:

The repeated statement of the value of these practices will eventually secure their wider adoption. Each agent should put his co-workers in the state, the state leaders, Mr. Filler, and Mr. Pierce on the mailing list to receive publications containing articles bearing on the blister rust control work. Help one another in this manner for the good of the work as a whole.

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VERMONT

Mr. Riley, under date of November 16, sent in the following news items:

New memoranda of understanding have been printed embodying the terms of agreement under which state and private cooperation is to be carried on. All labor costs are to be paid by the pine owner while only purely supervision charges are borne by the state. It is expected that while the adoption of these terms of cooperation will make it somewhat more difficult to secure local cooperation this next season, it will not in the long run greatly hinder the control program.

The state leader and district Blister Rust agents are attending community farm bureau meetings in various parts of the state with a view to securing the appointment of community leaders in blister rust control. Only a few such leaders will be appointed, but if the project proves successful this year an effort will be made to extend the program another season.

George E. Stevens, Blister Rust agent in the Rutland District, has submitted his resignation effective October 27th. Mr. Stevens has been very successful in securing local cooperation and his aggressiveness and ability made him a valuable addition to the Vermont Blister Rust organization. We hope he will be with us again in the spring.

A damage study of small areas in each of the Connecticut River districts has recently been completed. Upon the quarter acre plots all trees were examined in detail and the number and age of cankers noted. Infection ran 81.5% in the Barnet area, 96.3% in the Tunbridge area and 62.8% in the Townshend area. An interesting fact in connection with the latter area is that while only 62.8% of all trees were infected 50.6% of all trees were dead.

This fall roadside demonstration plots will be established in various places along the Connecticut river. Cankers are to be tagged and signs posted similar to those used in New York State roadside demonstration areas that have proven so successful.

W. E. Bradder has moved his headquarters from Wells River to St. Johnsbury Center. This change will place him in a more advantageous position for working the upper end of his territory.

Frank H. Rose and S. V. Holden will retain their headquarters in White River Junction and Brattleboro respectively at least for another year.

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The following attractive card, 3 1/4" x 6 1/4", was recently received from Mr. Riley. These cards are enclosed in the outgoing mail of the Chief Forester, as well as used by the field agents.

WARNING TO OWNERS OF WHITE PINE

"In order to protect White Pine plantations and natural stands of immature white pine from the BLISTER RUST DISEASE and to assure the trees reaching maturity, it is considered vitally important, by the best authorities on the subject, to destroy all species of CURRANTS and GOOSEBERRIES, both wild and cultivated, from the pine areas and for a surrounding distance of 600 feet or more
BLISTER RUST does not spread from pine to pine directly. DAMAGE CAN BE EASILY AND CHEAPLY* PREVENTED BY DESTROYING ALL CURRANT AND GOOSEBERRY BUSHES

You may obtain further information from any of the County Agricultural Agents or from this office

VERMONT FOREST SERVICE, MONTPELIER, VERMONT."

*Originally printed "cheeply" (Boy, page the proof reader)

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News from White River Junction

During the 1923 eradication season some 60 pine owners cooperated in protecting their pine in the towns of Hartford, Hartland and Woodstock, Vt. A total of 7,014 acres were eradicated at a cost of about 35¢ per acre. One state crew was maintained from May 1st to Sept. 1st, and two state foremen most of the summer. In the town of Hartland the pine owners organized a

crew of 5 men who under the supervision of a state foreman eradicated about 1000 acres. Total number of Ribes destroyed was 87,826.

Frank H. Rose.

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News from Southern Vermont

This past season there were 38 crew jobs in blister rust control, aggregating 5,965 acres, costing $2,050.37, or an average of 34.3 cts. per acre. 31,429 wild Ribes were pulled. An additional 14 cooperators did their own work on about 900 acres, pulling 1,000 Ribes at a cost of approximately $250. A comparison of the crew work with owner's work shows that the crews averaged 5.2 bushes per acre while the private owners averaged but 1.1 bushes per acre.

S. V. Holden.

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Mr. W. E. Bradder has organized a Boy Scout troop making entrance requirements include a knowledge of blister rust and other tests in woodcraft. He is also working in cooperation with the Fairbanks Museum this winter giving talks on Blister Rust, and care of white pine in the plantation and woodlot.

Much interest is being shown in the Blister Rust situation at community meetings. The farm bureau meetings at Barnet and Waterford were particularly successful in interesting owners of pine.

Total acreage eradicated in Mr. Bradder's district during the past season.....	4,233 acres
Total cost.....	$1602.60
Cost per acre.....	37.8 cts.
No wild Ribes pulled.....	93,436
" cult. " "	680

Eleven cooperators have signed up for 1924 eradication work.

90% of the pine of Newbury, 75% of the pine of Ryegate, 50% of pine of Barnet, and less than 25% of the pine of Waterford is protected.

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Mr. Wilmot G. Hastings, Chief Forester of Vermont and Collaborator of this office, resigned September 25th and the new forester has not yet been appointed.

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The following article appeared in a recent issue of the "Vermont Tribune" published at Ludlow, Vermont:

RID 1285 ACRES OF BLISTER RUST.

Work of Saving Pine Trees in This Locality
To Be Resumed in Spring.

"The work carried on this summer in this vicinity by the federal government toward the eradication of blister rust from pine trees has ended for the season. This work has been in charge of George H. Stevens who has employed a crew of seven men.

"Blister rust is carried to the pine trees from currant and gooseberry bushes and the way in which the disease is fought is by the destruction of these bushes in the threatened area.

"In the town of Cavendish where most of the work was carried on this season, 1285 acres of pine lands were treated. The cost of this work was $590.10, an average cost of 46 cents per acre. This cost was met by the owners of the land and the work done under the supervision of the federal expert.

"In treating these 1285 acres, a total of 11,827 currant and gooseberry bushes was removed. Thirty-three cultivated bushes were removed in order to protect the pine lands of Walter Spaulding and 66 cultivated bushes destroyed on the property of Miss Fannie B. Fletcher.

******* "Among those who have helped in the eradication work by paying the costs of having their land protected are John Smith, Sterling Bills, Ford Wheeler, Gay Brothers, Leon Gay, Walter Spaulding and Miss Fannie Fletcher.

"At the Ludlow fair the government has arranged an exhibit showing the dangers of the blister rust and how it works. This exhibit was arranged by Mr. Stevens who also has considerable literature on the subject which he will be glad to give those interested."

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Editorial: Local items mentioning the names of cooperators, giving some few statistics on the work, such as number of bushes pulled, acres protected, cost per acre, etc., are carefully perused by the local reader. People who have cooperated in blister rust control work are interested in such items which often inspire others to follow their lead. The editor wishes to direct the attention of state leaders and agents to the statements in the first and last paragraph of this article crediting the federal government with doing the work and failing to mention cooperation with the state forest service. Such statements give the erroneous impression to the general public that the work is done only by the federal government. This is incorrect and undesirable. In reaching the public either through interviews or written articles, it is of great importance that proper credit be given to the cooperating state agency and that the public generally, clearly understand that the blister rust control work is carried on cooperatively by the state and the U. S. Department of Agriculture. Particular pains should be taken at all times to give the state proper credit in every public statement whether verbal or written.

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MASSACHUSETTS

A preliminary summary of the blister rust work in Massachusetts up to October 31 has just been received from Mr. C. C. Perry, State Leader.

Educational work has been conducted this year intensively by blister rust agents in six districts, namely; Essex, Plymouth, Worcester (north and south), Franklin and Hampden.

No special effort has been made to locate new areas of infection although in conducting the regular field work infected pines have been found in 18 additional towns. This brings the number of towns in which pine infection has been found to a total of 142. A particularly striking infection area was found in Ashburnham, another in Spencer, both in Worcester County. Several new areas were found in Plymouth County, also in Hampden. Infection in southern Berkshire County is very general.

Control work was started for the season on April 16 and discontinued in most sections on September 15; a small amount of work however continued until October 15.

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Data on Ribes Eradication for 1923.

No. wild Ribes pulled		1558107
No. cultivated Ribes pulled		14977
Total expenditures by cooperators	$ 6894.90	
Total expenditures by state (all work)	16050.53	
Combined expenditures State and Local cooperators		$22945.43
Combined average cost per acre		.11

The above figures are subject to revision, but are reasonably final.

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Conference of State Agents.

The state agents met with their leader, Mr. Perry, in a conference on November 30th and December 1st. A summary of the work was presented by the state leader. Mr. Roop described in detail his method of obtaining publicity by the use of periodic newspaper articles and the use of form letters to obtain the cooperation of non-resident owners.

Mr. Brockway discussed methods of handling the Cultivated Ribes Problem. He had been very successful through persuasion, rather than compulsion. This past season Mr. Brockway had secured the destruction of 5,983 cultivated bushes, and there had been only two claims for compensation.

Among other subjects discussed at the meeting were the checking of Ribes eradication work, the methods of conducting preliminary educational work, cooperation with the county agricultural agents, and the use of

extension methods.

Mr. G. Stanley Doore, who had charge of the Ribes eradication work on the Wachusett Water Reservation, gave a report of the work for the year. This reservation had an area of 4935 acres, of which 1617 acres are solid pine. The Wachusett Reservoir supplies water for the Metropolitan District (Boston and vicinity). The labor for the work was furnished from the regular employees of the reservation, who took a personal interest in the work of protecting the pines they themselves had set out.

A total of 9222 Ribes bushes were destroyed on the 4935 acres of the reservation, and 1370 bushes on the protective strip of 3100 acres abutting on this area. Within the reservation no infections were found on the pines, altho infection was found on a few wild Ribes.

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Essex County Work

The annual report by Mr. Wm. T. Roop of Essex County was the first report to be received from the County Educational Agents of the Northeastern States.

Listen to some of the things accomplished in Essex County during 1923!

Before the spring season opened two articles per month were prepared and published in the 18 Essex County papers. This paved the way for securing local cooperation in the 10 towns included in the Essex County plan for the year.

With 4 assistants who began work on April 15, Mr. Roop secured 379 cooperators, and 338 completed their Ribes eradication work; practically finishing 9 of the ten towns. 23,465 acres were examined. 7,756 acres of

pine were protected and 125,933 Ribes bushes destroyed, of which 3,050 were cultivated bushes and 122,883 were wild bushes.

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Mr. Perry calls attention to the item in the Blister Rust News of August 25th, in reference to the mileage rates paid by the State of Massachusetts for the use of personally owned cars on official work.

The Massachusetts Commission on Administration and Finance has revised its previous ruling as follows:

"For any and all types of cars, beginning with the new fiscal year, December 1, 1923, the allowance is to be as follows:

$ .08 per mile for the first 2,000 miles charged by the employee in expense account during the year.
$ .07 per mile for mileage charged in expense account between 2,000 and 4,000 miles.
$ .06 per mile for mileage charged in expense account above 4,000 miles.

From December 1 mileage will be approved as by the above schedule.

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RHODE ISLAND

Mr. Anderson, in a recent letter, has summarized the Ribes eradication work for the present year as follows:

	Worked First Time	Area Checked	Total
Area in acres	24,228	7,080	31,308
Time	92 days	28 days	120 days
Wage Cost	$1,326.72	$430.08	$1,756.80
Expenses	----	----	88.31
Cost per acre	$ .058	$ .062	$ .058 plus

The total sum spent on eradication is $1,845.11

There have been 121 co-operators this season, 34 of whom used their own labor. (Cultivated bushes mostly.)

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Under date of November 20th, Mr. Anderson writes that,

> "Blister Rust exhibits were placed in all the agricultural fairs in the state this year. We shall also have a space at the Annual Corn Show that is to be held in Providence right after Thanksgiving. Several white pine woodlots on a state road have been secured for demonstration experiments and work will commence soon."

NEW YORK

Extracts from N. Y. Conservation Commission News Letter of Nov. 1, 1923.

A Meeting of the New York and Vermont blister rust agents was held in the Albany office on October 1 and 2, at which time they received instructions with regard to the conduct of their work, particularly with regard to the educational phases of it, and also other branches of conservation work. The agents each read a report of work in their respective districts and joined in a general discussion. Agents from Vermont were also present at the meeting. Mr. John P. Ryan, of Rose and Kiernan, Albany, talked to the men, his subject being "Selling Protection Against Blister Rust to the Pine Owner." Mr. Hutton, of the Knickerbocker Press, Albany, also spoke on "Suggestions for Newspaper Publicity in Blister Rust Education." These talks were very highly appreciated by the men. On October 3 the party left Albany by automobile, and visited various pine plantations infected with blister rust."

Wm. G. Howard, Asst. Supt. of State Forests, and Dr. H. H. York, Forest Pathologist, gave talks on reforestation and blister rust respectively, on September 19, before a meeting of the Pomona Grange at Lewis. As a result of those talks, orders for 11,000 trees were received that night.

Dr. York states that according to his information 13,625 acres of land have been eradicated under state supervision - paid for by private subscription. The report shows 458,574 wild Ribes pulled on this area.

They have already in sight a total of 10,000 acres for work in 1924.

There was a meeting of state blister rust leaders of Northeastern States at Chestertown on October 8 and 9. Much of the time was spent in the field studying blister rust conditions in New York. The men all expressed their deep appreciation of having the opportunity of seeing our conditions, which they stated are far more difficult and entirely different from any of the New England states.

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The Importance of Roadside Demonstrations.

During the State Leaders' Meeting at Chestertown an interesting incident occurred showing the value of roadside demonstrations and the advisability of talking blister rust to any individual who is interested whether or not he is a pine owner. In company with Dr. York and Mr. Amadon the state leaders were studying a roadside demonstration at Pottersville when two automobile parties stopped to find out what it was all about. Dr. York carefully explained about the rust. A member of one of the parties was a Lieutenant in the New York City Fire Department. His son obtained a photograph and data from the interview for writing a composition on the blister rust.

MORAL: Never fail to talk blister rust to an interested individual whether or not a pine owner. Each one helps to spread information about the disease to another.

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Mr. Fivaz reports that motion picture shows with blister rust films were held in Warren County during the week of November 19th. The attendance ranged from 40 to 70 at each show and much interest was aroused.

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PENNSYLVANIA

A report of this season's scouting for the blister rust has just been received from Mr. C. H. Hadley, Director of the Penn. Dept. of Agriculture, Bureau of Plant Industry.

> "The work of the present season has been a continuation of the policy of 1922, involving (1) a survey to determine the actual extent of infestation in the state by examination of both pine and Ribes, but particularly the latter: (2) a survey of the wild Ribes in the sections likely to be soonest affected, to determine the average numbers occurring in four common types of habitat, fence rows, pasture, woodland, and swamp."

Mr. L. W. Hodgkins scouted the northern counties not covered last year, including Tioga, Potter, McKean and Warren, from September 4 to September 16, finding no disease anywhere on either pine or Ribes.

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MICHIGAN

Mr. Baxter has the honor of submitting the first annual state report for this season's work. The objects of the work this year were to increase the public interest in the protection of white pine from the blister rust with the idea of gradually securing the elimination of the cultivated black currant and of securing the application of control measures by pine owners where necessary.

Mr. Baxter states that in Michigan the future concern regarding the rust will be with the large private, state and national plantings rather than with virgin timber. The plantation acreage is large and is yearly increasing, while the virgin pine stands can scarcely be located, and are rapidly diminishing in size. All of the large land and timber holders in Michigan were reached either personally or by letter and those most interested in forestry and conservation have been interviewed in connection with this year's blister rust control work.

The extent of pine planting in Michigan is indicated by the fact that the State Forester, Mr. Marcus Schaaf, is planting on state forest land about 3,000,000 young trees, mainly of white and Norway pine, involving a planting program of about 2,000 acres yearly, and that 200,000 white pine are sent out annually by the state nurseries to Michigan people for planting. Forest Supervisor R. G. Schreck, on the Michigan National Forest, states he was planting 1,000 acres per year, mainly Norway pine, though about 20,000 white pine are planted yearly on the Michigan National Forest.

Mr. Baxter continues,

Ribes in Michigan

"Wild currants and gooseberries are abundant along the streams and in the swamps in the northern part of the state, but in general, are not found on the sand. The greater areas of the state forests and the Michigan National Forest at East Tawas are so situated on the plains. Should the blister rust appear on these areas eradication would be a practical proposition and could be carried out without much expense. The possible exception to this, according to Mr. Schaaf, is the Alpena State Forest. Here the expense and effort would necessarily be greater than on any other state forest because of the large amount of swamp country.

"Black currants, as previously reported, occur to some extent in the iron mining sections, and along the Michigan-Wisconsin line. Continuing the distribution in western Michigan, but in the southern peninsula, they are perhaps more numerous about Hart than in any other section. This section is important for growing of Ribes commercially.

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No new outbreak of the blister rust was discovered this year in Oakland County, though the disease has been found in several localities in that County in past years on pine and Ribes.

WISCONSIN

Mr. H. J. Ninman, State Leader, has sent in a brief report of conditions in Wisconsin.

"In 1921, control work was carried on at Reserve, on the Indian Reservation, the Ribes being removed as well as the pine infections (about a dozen small trees).

"Blister rust infections are now becoming less in the area. On July 21 I found one R. cynosbati bush with 4 leaves slightly infected about one-fourth mile east of the original pine infection. On September 22 I could find no trace of the disease. You will therefore see that the disease is not making any progress. On July 21 Mr. Chas. Gruber, the man in charge of agriculture on the reservation at Reserve, was with me, and I gave him the four infected gooseberry leaves which will serve as a sample for him.

"Only one more or less serious infection area was located by me this summer. This was on the property of Hance Haugen, in the town of New Haven, Dunn County. About 200 Ribes bushes were found infected over an area of about three acres of a fair young reproduction of white pine and a group of approximately 15 large pine up to 100 years old. The Ribes on the area were immediately eradicated without stopping for co-operation, as I had the crew working on an adjacent 40 acre lot in the Prairie Farm area at the time. About 12 acres surrounding the infection were worked, including 3 or 4 acres in an excellent reproduction of white pine ranging up to 15 years."

Mr. William G. Thompson resigned October 1, to accept a position in the Department of Chemistry at Macalester College, St. Paul. We will miss Mr. Thompson since he has been on blister rust work in Wisconsin in one capacity or another since 1917, working on blister rust mainly during his summer vacations. During the past season he has ably conducted experimental control work on the demonstration area at Eau Galle, securing results which should prove valuable to the field work. The data will be analysed and compiled this winter under Mr. Filler's supervision.

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The following suggestions by a Wisconsin county agricultural agent are worth following in any line of work, and are recommended to the field men for their consideration. Too often we are apt to overlook the main issues of a problem in the detail of its accomplishment.

SUGGESTIONS TO COUNTY AGENTS

by Agricultural Agent Wojta, Wisconsin

1. Be Energetic.

   (a) That you may make a success of your work, among other things, you must be energetic.

   (b) Push your work and do not let it drive you.

   (c) Attempt to do your "level best" all the time.

2. Keep Your Eye on the Big Things.

   (a) Do not jeopardize the big things for the little.

   (b) To be a leader, you must solve some real problem with a reasonable amount of detail connected with it.

3. Have a Vision.

   (a) Have a vision of the job you are to do.

   (b) Visualize the results which should be obtained of your plan of work for the year.

   (c) Plan your work carefully and definitely.

   (d) Leave no work undone which might contribute toward success.

4. Do the Things Which Will Count.

   (a) Write up your plan of work carefully and refer to it from time to time.

   (b) Spend your energy largely on things that will count. Weed out the less important things.

   (c) Do not be side-tracked by other pressing duties and obligations.

5. Finish What You Start.

   (a) Have the power of "stick-to-it-iveness" and stay with the job until it is finished.

(b) Do one or two jobs better than some one else has been able to do, rather than attempting several and none brought to completion.

(c) He who constantly changes from one thing to another, finishes nothing, eventually is doomed to failure.

(d) Ability to do with a constancy of purpose will in a large degree measure up your success.

Courtesy of The County Agent and Farm Bureau, Vol. 10, No. 6, June, 1922.

Mr. Posey, on reading the above, stated that it reminded him of one of his western men, Mr. W. E. Morgan, who was employed during the season of 1921.

Upon one occasion Mr. Morgan was short of funds in the field. This neither discouraged him nor impaired the progress of his work. He solved the problem by spending several nights in haystacks and kept on scouting.

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MINNESOTA

Prof. E. G. Cheyney, of the University of Minnesota, who was in the East this fall, sends the following note.

> "I went from Albany up to Port Henry and drove across to the White House Inn where I met York and Martin. The next day they drove me down to Chestertown and Warrensburg and showed me three infected areas on the way. These have certainly undergone a wonderful change since 1917. At that time, there were only a few spots where the disease could be found by a thorough search. New infection is literally everywhere that you look. Unless the eradication of Ribes in plantations and other dense stands of pines prove effective in checking disease, it certainly looks as though there was little chance for white pine in that section. It makes me wonder whether the same thing is going to occur in this section of the country. It may be that the next two or three years may show a similar development here."

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The Lake States' Forest Experiment Station has lately been established by the Forest Service. Mr. Raphael Zon, Director of the Station, has estab-

lished headquarters at University Farm, St. Paul, Minnesota. In a recent address to the pulp and paper industry he made the following statement:

> "Forest experiment stations will do for forest practice what agricultural experiment stations have done for agriculture. After all, forest crops and agricultural crops are both products of the soil. We are coming to look upon forests as a crop, rather than as a mine. Forestry is coming and coming soon, especially here in the Lake States. There will be probably a big reforestation program in the Lake States, and one of the tasks of the Forest Experiment Station is to prepare the ground for it.
>
> "There are probably fifty or sixty million acres of idle land in the Lake States producing little or nothing for the market or settlement. At the rate at which northern Minnesota, for example, is being cleared and settled it will take a century to make even the best of this cut-over idle land productive of agricultural crops. All of it might be producing valuable timber crops."

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How the Fair Situation in Minnesota Was Handled This Year.

"The secretaries of the fair associations were written and space was secured for exhibit purposes. On the opening day or the day previous the exhibit would be placed. I always put my entire time day and evening at the fair explaining the blister rust and the control methods, also what the second growth white pine meant to the farmers in the eastern states. The great need of reforesting the idle lands of Minnesota was emphasized and the necessity of a state forest nursery, where trees could be furnished the farmers at cost, was urged. I cited as an example what New York is doing in the way of reforestation on a large scale. Fair exhibits were put on in the counties of Chisago, Benton, Kanabec, Isanti and Goodhue. The attendance of the first three fairs was 25,000. At the Minnesota State Fair or Exposition a large exhibit of blister rust was displayed and the attendance here was 418,728."

C. M. Roberts.

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The Minnesota Farm Review, published at the University Farm, St. Paul, Minnesota, for October 18, 1923, had an interesting item entitled "State Barberry Survey Complete. College Men Spend Summer Vacations in Employ of State and Federal Forces."

Edit. The article in question occupies three fourths of a column on the frontpage. This is a good suggestion and might be duplicated for

blister rust control in the spring if College men are desired for eradication work by State Leaders. A story by one of the men on the summer's work, if approved by the State Leader, might stimulate the interest of the student body in this form of employment for the summer.

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SUMMARY OF WORK IN EAST.

Dr. Martin stated on his return to Washington that the work of controlling the blister rust in the northeast has made distinct progress this year, as shown by the increased acreage protected, the increased number of cooperators, both town and individual, and the increased amount of town and local funds expended in cooperative control work. From his visits with the various agents he feels in general that they need more frequent contact and helpful advice from their state leaders and the blister rust specialists in solving their local problems.

The latest estimates for 1923 show the states of New England and New York appropriated $103,500.00 for blister rust control, 123 towns subscribed $40,638.00 and 2,237 individuals have expended $40,638.00. The total acreage eradicated this season will probably exceed 800,000 acres. Better cooperation has been developed on the extension features of our work, and approved methods of interesting the pine owner have been successfully utilized. Some states have prepared definite statements of policies and plans for control work which have proved very valuable in organizing and prosecuting the cooperative work. State checkers and federal specialists have been used for the first time and their efforts have given very satisfactory results. These men and the state leaders with the assistance of the agents have contributed much to the improvement and increased efficiency of the work as a whole during the past season. Continued effort should iron out more of our troublesome local field problems and lead to greater achievement during the coming year.

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WESTERN STATES

Summary of Infections in Western Washington.

Mr. Wyckoff has furnished the following data:-

Cronartium ribicola on Ribes nigrum. 3/4 mile north of Silver Lake, Snohomish County, Washington. Two bushes infected out of three. P. S. Simcoe, September 27, 1923.

Cronartium ribicola on Ribes bracteosum. Oak Bay, near Hadlock, Clallam Co., Washington. P. S. Simcoe, October 1, 1923.

Cronartium ribicola on Ribes nigrum. On property of G. J. Picker, Everett, R. F. D. 1 mile north of north end Silver Lake. Two bushes infected out of three. G. A. Root, September 29, 1923.

Cronartium ribicola on Ribes bracteosum. 11 miles north of Shelton, Mason Co., Washington. P. S. Simcoe, October 1, 1923.

Cronartium ribicola on Ribes bracteosum. Twelve miles south of Stanwood, Snohomish County, Washington. P. S. Simcoe. September 27, 1923.

Cronartium ribicola on Ribes bracteosum, 1/4 mile north of Silver Lake, Snohomish County, Washington. P. S. Simcoe, September 27, 1923.

Cronartium ribicola on Ribes bracteosum. Three miles north of Everett, Snohomish County, Washington. P. S. Simcoe, September 27, 1923.

Cronartium ribicola on Ribes nigrum. Yelm, Thurston County, Washington on property of Hebron Farm. Ten bushes out of 2,000 infected. P. S. Simcoe, October 2, 1923.

Cronartium ribicola on Ribes bracteosum. Port Orchard, Kitsap County, Washington. G. A. Root. October 4, 1923.

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Blister Rust Radio Talk

Mr. Wyckoff has sent in this interesting News Item on the use of the radio:

"Some time ago, Professor Barss gave a radio talk through the sending station of the Portland Oregonian, explaining blister rust work in Oregon and advocating the eradication of cultivated black currants. A few days later, Goodding received a letter from

Mrs. Jacob George, St. Helens, Oregon, twenty-five miles out of Portland, in which she stated that she had heard the talk and as a result was eradicating the seven cultivated black currant bushes on her premises. Subsequent investigation showed that the job of eradication had been thoroughly done, in accordance with the instructions given."

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Western Blister Rust Film

The Office of Motion Pictures states that the new western blister rust film will be ready for release about the 15th of December.

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Western Blister Rust Conference

A letter has recently been received from Mr. C. S. Chapman, Executive Secretary of the Western White Pine Blister Rust Conference, calling attention to the coming meeting which will probably be held late in December or early in January.

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WESTERN CANADA

Experimental Plots at Daisy Lake, in British Columbia.

Dr. J. S. Boyce, of the Office of Forest Pathology, writing Mr. Detwiler on September 8, 1923, states that,

"Lachmund and I have just completed the work on the plots at Daisy Lake. Last year 40% of the trees on Plot 1 had been killed by blister rust. This year the total dead amount to approximately 73%.

"The infection on Plot 2 is also much heavier than last year. Several of the larger trees (12"-18" D.B.H. on this plot were climbed and found to be heavily infected throughout the crown, although, of course, the infection is not as heavy in the extreme top as it was in the middle crown. Furthermore, in each case infection will probably enter the bole 15 to 20 feet from the top in the next few years.

"Infections were also found on several seedlings about six inches high.

"All the Ribes on each plot were recorded by feet of leaf-bearing stem so that the figures would be directly comparable to those taken in your work.

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GENERAL

Hearings Before McNary Committee.

On November 23rd the Senate Committee on Reforestation, known as the McNary Committee, held a hearing in Washington, D. C. to investigate problems relating to reforestation, with special reference to the importance of fungous pests of forest trees, the nature and extent of losses from this source and the means being adopted to prevent these losses.

Dr. W. A. Taylor, Chief of the Bureau of Plant Industry, made the general presentation of the subject. He was followed by Dr. E. P. Meinecke, Pathologist in the Office of Forest Pathology, who discussed in detail the damage caused by different classes of fungi, such as heart-rots, parasitic fungi, etc, and methods for control of these pests. The Committee seemed to be specially interested in blister rust control in the Eastern and Western forests and called on Mr. S. B. Detwiler to discuss this subject. Mr. Detwiler quoted from a progress report by Mr. Filler, and the following extract from this report was inserted in the report of the Hearings.

"In the New England-New York district, during the past six months (May-Oct.), 36 permanent agents, (and 13 temporary agents employed for 2-3 months in Maine) have held 212 meetings which were attended by 11,324 people, 337 exhibits have been placed, 30,183 publications distributed, 517 blister rust news items published, 5,681 posters placed, 9038 initial interviews made, and 3,175 follow up calls. In addition, 2,421 persons have been given individual demonstrations of blister rust damage, and 375 group demonstrations of B. R. damage reached 2,944 persons. Eradication methods were demonstrated to 1,567 individuals, and 256 group demonstrations of eradication methods were attended by 1,334 persons.

"This educational work (according to latest estimates) produced about 2,250 cooperators, who expended nearly $41,000. on control work, - 123 towns appropriated $40,638. The total state funds subscribed was $103,500. As a direct result of these cooperative funds, 105 state crews of six men each and 56 state scouts were employed and supervised by the agents. These state men and the individuals who did their own eradication work cleared over 800,000 acres of Ribes during the past season. In order to make sure a high efficiency was obtained in this work, the agents made 1930 separate eradication checks during this period. The acreage cleared of Ribes this year is nearly twice that done last year, and is about 1/3 of the total acreage covered since eradication work was begun in 1916."

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Forest Extension Work

Miss Florence E. Ward, of the Department Extension Service, in her report on the General Status of Extension Work in New England and the Middle Atlantic States, has devoted a page and a half to blister rust control and forest extension. The following paragraph is quoted from this report:

"The value of pine lumber.- The demand for white pine lumber is steady and there is a large acreage suitable for growing white pine. Prices have reached the point where it is profitable to use the less valuable land for growing this timber. During the past ten years the average increase in stumpage values in New England has been about 45 cents per year per thousand feet. A well-stocked pine lot in New England at present pays a gross annual return of at least $10.00 per acre over periods of 35 to 70 years. Of this at least $5.00 per acre per year is net profit, even when all carrying charges are brought forward at 5 per cent compound interest. Other species give equal or greater returns in certain sections, but white pine is considered the best species for reforestation purposes over a large part of non-productive land from Maine to Minnesota.

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Blister Rust Attracts Attention of Federal Land Bank.

Mr. E. H. Thomson, President of the Federal Land Bank of Springfield, wrote Dr. J. F. Martin on August 28, 1923, relative to the attitude of the Bank in loaning money on white pine stands where there is danger of infection from blister rust.

"The Bank has never adopted the policy of making it a condition that currant and gooseberry bushes be removed before granting a loan. Our attitude is this. We believe that the farm woodlot and timber land are, and should be considered, a part of the farm crops and as such should be given the same careful attention as any other part of the farm business. Naturally, we are interested in the up-keep and preservation of that farm as a unit. We inspect our loans regularly and if we find that a farm is deteriorating, either through mismanagement of the soil or lack of care of the buildings, or through poor care of the woodlot, by cutting or by disease, then we would ask that steps be taken at once to remedy conditions or pay up the loan. If we found that currant and gooseberry bushes on a certain farm where a pine stand constituted an important part of our security were the cause of serious damage through blister rust, in all probability we would ask and insist upon their removal."

The Federal Land Bank of Springfield, besides loaning money up to 50% on the value of the land and up to 20% on the value of the buildings, also loans money on the stumpage value of mature timber at the time of appraisal, up to 20% of its value. This bank has assisted its customers in caring for their property by printing a leaflet on the care of the woodlot, which may be secured from the bank upon application. Paragraph (6) of this leaflet, relative to blister rust, is as follows:

"(6) Pull up and burn all currant and gooseberry bushes growing within 900 feet of your white pine stands to prevent the spread of the white pine blister rust. This work should be repeated every five years at least. The blister rust threatens complete extermination of white pine growing in proximity to currant and gooseberry bushes unless proper precautions are taken.

"In regions where wild currant and gooseberry bushes occur, young white pine stands have no value as security for loans unless protected in this manner. (Free advice on blister rust control may be secured from your State Forester)."

This information is given in the News Letter so that field men will be correctly informed and can intelligently reply to questions.

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Planting Statistics on National Forests for 1922.

During the past year the total acreage reforested artificially on National Forests in the country amounted to 7,051.89 acres planted and 21.50 acres sown with seed, making a grand total acreage of 70,072.39 acres.

Of this total acreage 1,497.93 acres were planted and 20 acres sown with 5-needled pines, a total area reforested with 5-needled pines of 1,517.97 acres. This constitutes 21.4% or a little over 1/5 of the total area reforested by the Forest Service.

Of the 1497.93 acres planted in 1922, 1346.3 were planted with Pinus monticola, 139.13 acres were planted with Pinus strobus, 11 acres were planted with P. aristata and 1.5 acres with P. flexilis. The 20 acres sown were with P. monticola. This makes the area reforested with P. monticola, either pure or in mixture, 1366.3 acres.

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Notes from Office of Forest Pathology.

Miss Rathbun and Dr. Spaulding have completed this year's field work at Warrensburg, New York, on viability of sporidia, and have returned to Washington. The sporidia have been found under certain conditions of temperature and humidity to be much longer lived than previously supposed.

Mr. Hahn is now working up the final results on his detailed study of the physiological differentiation of Cronartium ribicola and C. occidentale on species of Ribes, in the pathological greenhouse.

Miss Taylor has identified the few specimens of blister rust sent in by field agents. This phase of the work has considerably decreased from former years. The blister rust has become so widespread in New England and New York that doubtful specimens on pine in this region do not have sufficient importance, except in special cases, to justify the time necessary

for sectioning and study.

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Quarantine Work

Mr. L. W. Hodgkins began quarantine inspection work at Kansas City on October 10th, and continued it until November 17th. Six violations of quarantine were intercepted at this point, one coming from a nurseryman, and the others from private parties. Nursery shipments were reported light.

Mr. Hodgkins has done some real educational work with the postal and express authorities, which has made it much easier to handle the shipments of nursery stock this year. He has maintained the good will of these officials so necessary to our inspection work.

Mr. C. M. Roberts inspected nursery shipments at St. Paul during October and November, 1923. Quarantine inspections were also carried on at several western points. A summary of the 11 violations of Quarantine 26, which were apprehended this fall, shows that 7 were of currant or gooseberry bushes, and four were white pines.

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PERSONAL ITEMS

Mr. E. R. Ford has been engaged for some months in analysing and preparing for publication the results of field work at Kittery Point, South Deerfield and other infection centers.

Mr. Richards has been called into the Washington Office to prepare for publication a study of the infection at Temple, N. H. Progress has been made in this work.

Dr. J. F. Martin made an extensive field trip covering the northeastern states, from August 27th to October 13th, returning to Washington favorably impressed with the progress being made in accomplishing the

control program. However, he states there is still need and room for rapid improvement in some features of our work.

Miss E. A. Wells, File Clerk of the Washington Office, resigned November 15th and was married on Thanksgiving Day.

Miss Anna E. Gott, former Chief Clerk of this Office, has recently secured a transfer to the Office of Forest Pathology. She has been succeeded by Mr. H. P. Avery, formerly with the War Department.

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PUBLICATIONS

Blister Rust

Barss, H. P.
The menace of the white pine blister rust. Bienn. Rep. Bd.Hort. Oregon. 17: 220-226. Illus. 1923.

Colley, R. H. & M. W. Taylor. Studies on the aecial stages of Cronartium ribicola and C. occidentalis. (Abstr.) Phytopath. 13: 46. Jan. 1923.

Metcalf, Haven. White pine blister rust in the Northwest. (Abstr.) Phytopath. 13: 46. Jan. 1923.

Randall, C. E. Farming the forest for a pine crop. American Forestry 29 (1923) No. 352 p. 195-198, 250, 5 figures.

Spaulding, Perley. Foreign studies of white pine blister rust. (Abstr.) Phytopath. 13: 45. Jan. 1923

Spaulding, Perley. White pine blister rust infection through grafted roots. (Abstr.) Phytopath. 13; 46. Jan. 1923.

White Pine

Anon. White pine. Tree pamphlet No. 1. Forestry Branch, Canada. Dept. of Interior, 8 pages, 1923.

Anon. White pine. Forestry leaflet No. 31. Maryland State Board of Forestry, 4 pages, Nov. 1922.

Bishop, L. L. Pines of Heart's Content. American Forestry, June, 1923. This article is of

interest since it portrays an area of 600 acres in Warren County, Pennsylvania, which is probably the last remaining stand of virgin white pine timber in the state. "Heart's Content" is located in the midst of what is becoming the Allegheny National Forest and Mr. Bishop is trying to secure the preservation of this magnificent tract of timber.

The Office of Blister Rust Control has shown a number of scenes of this virgin timber at "Heart's Content" in its motion picture films, which are available for distribution by the Office of Motion Pictures of this Department.

Kirkwood, J. E. Forest Distribution in the northern Rocky Mountains. State Univ., Missoula, Mont., June, 1922. 180 pages.
On pages 123-127 and 153-159 are found excellent descriptions of the habitat and associates of the three 5-needled pines, P. monticola, P. albicaulis and P. flexilis.

Koch, Elers. The Inferior Species in the White Pine Type in Montana and Idaho. Journal of Forestry, Vol. 21, No. 6, October, 1923. p. 588-599.
This is a good presentation of the difficulties encountered in forest management on National Forests where profits can be made from logging western white pine and yellow pine, but where logging and milling of the inferior species, fir, larch, white fir, and hemlock is carried on at a loss.

Ribes

Goodding, L. N. Ribes of Oregon.
Mimeographed, 30 pages and 27 pen and ink drawings. 1923. Wash. Office of Blister Rust Control.

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ATTENTION

The Washington Office sent out a mimeographed list of "Publications Available to Blister Rust Employees on October 26, 1923."

One of these lists was forwarded the Office from an agent in New England or New York with the request that certain publications be sent him. Unfortunately, this letter was lost in some unaccountable manner before the

order was filled. If the writer will duplicate his request, the publications will be forwarded.

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Contributions to the Blister Rust News are desired from the field men. You have the news; why not share it with others. News items, stories or discussions of your problems should be sent in by the first of each month.